



NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

Princeton Forrestal Village, 116-390 Village Boulevard, Princeton, New Jersey 08540-5731

Operate Within Interconnection Operating Limits SDT Determine Facility Ratings, Operating Limits, and Transfer Capabilities SDT Operating Limit Definition Task Force Meeting

Tuesday, August 31, 2004, 8 a.m.–5 p.m.
Wednesday, September 1, 2004, 8 a.m.–Noon

Renaissance Nashville Hotel
611 Commerce St.
Nashville, TN 37203
Telephone: (615) 255-8400

Dial-In Participation
(816) 650-0669
Access Code: 831018#

AGENDA

1. Administrative

- a. Membership and Guests — Meeting Chair, Ed Riley
- b. Introductions — Chair
- c. Standard Drafting Teams and Task Force Rosters (**Attachment 1a, 1b, and 1c**)
- d. Arrangements — Lunch on Tuesday August 31, 2004 – Meeting Coordinator, Tom Vandervort
- e. Parliamentary and Anti-Trust Procedures
 - i. Parliamentary Procedures — Chair (**Attachment 1d**)
 - ii. Anti-Trust Compliance Guidelines — Chair (**Attachment 1e**)

2. Operate Within Interconnection Reliability Operating Limits

- a. Meeting Purpose
- b. Interconnection Reliability Operating Limit Definition
- c. How to Set IROLs
- d. Which Standard Should Contain the IROL Definition and Development
- e. Field Test SOLs and IROLs
- f. Near-Miss Reporting
- g. IROL Training Documents

a. Meeting Purpose

Three different groups have had a vested interest in Interconnection Reliability Operating Limits — The Operate Within IROL SDT; the Determine Facility Ratings SDT; and the Operate Within Limits Definition Task Force (OLDTF). This meeting is intended to bring together the three groups to discuss SOLs and IROLs in order to come to consensus for future NERC Reliability Standards.

At the July 21–22, 2004 OC Meeting, Chairman Fidrych suggested that it would be better to merge the “OLDTF Recommendations and Next Steps” into the work that the standards drafting teams are doing on Standards 200, “Operate Within Interconnected Reliability Operating Limits,” and 600, “Determine Facility Ratings, Operating Limits, and Transfer Capabilities,” and to provide another report to the Operating Committee at the end of August, 2004.

b. Interconnection Reliability Operating Limit Definition

Standard 200: Operate Within IROLs

Interconnection Reliability Operating Limit: The System Operating Limit applied to a Facility (or group of Facilities) where violating that System Operating Limit under single and credible multiple contingencies could cause instability, cascading outages or uncontrolled separation affecting a wide area of an Interconnection. (The methodology for developing System Operating Limits and the scope of single and credible multiple contingencies that must be considered in developing System Operating Limits are identified in Standard 603.)

Policy 9 – Reliability Coordinator Procedures; and from the OLDTF Report

Interconnection Reliability Operating Limit: The value (such as MW, MVar, Amperes, Frequency or Volts) derived from, or a subset of System Operating Limits, which if exceeded, could expose a widespread area of the Bulk Electric System to instability, uncontrolled separation(s) or cascading outages.

Standard 600: Determine Facility Ratings, System Operating Limits, and Transfer Capabilities

System Operating Limit: The maximum or minimum permissible value (e.g., MW, MVAR, MVA, current, frequency, voltage) on a facility or a limited group of facilities without violating applicable facility ratings and reliability criteria, as determined through system studies and/or operational experience. System operating limits may result from voltage, thermal or stability limits associated with one or more facilities. (Stability and voltage limits may be reflected as a permissible loading level.) System operating limits may refer to limits in both real-time and operations and planning studies.

DISCUSSION

The IROL SDT identified an “operating limits” conflict with the Determine Facility Ratings Standard.

The Policy 9, definition states that IROLs are a subset of SOLs, as the IROL draft standard does, however, it uses different language within its IROL definition.

The Facility Ratings SDT did not define IROLs. By the System Operating Limit (SOL) definition, it seems to address the same parameters as the IROL.

The IROL SDT, the FR SDT, and the OLDTF will discuss and attempt to come to a consensus on an IROL definition, and to clarify the SOL – IROL relationship.

ATTACHMENTS

Attachment 2b1 — Policy 9, Reliability Coordinator Procedures

Attachment 2b2 — Draft Standard 200, Operate Within Interconnection Reliability Operating Limits

Attachment 2b3 — Draft Standard 600, Determine Facility Ratings, System Operating Limits, and Transfer Capabilities

Attachment 2b4 — NERC Interconnected Reliability Operating Limit – Informational Reporting
(Draft for Discussion and Comment by Operating Committee – July 21 – 22, OC Meeting)

c. How to Set IROLs

Determining how to set IROLs has been a challenge for the IROL SDT. The IROL SDT, the FR SDT, and the OLDTF, are requested to synergize their efforts to establish an understandable methodology to set IROLs. This methodology should determine if a minimum set of studies must be conducted to determine if the SOL is also an IROL. For example – should the standard require a criteria that you study exceeding the SOL by 5% for 30 minutes or should the standard require that you study exceeding the SOL by 20% for more than 30 minutes – or does some other % or duration make sense?

The OLDTF Recommendation and Next Steps, 3. NERC:OC — To direct the Transmission SC to develop the Technical Documentation to ensure a consistent development of limits (SOL and IROL).

The OC Chairman suggests that it would be better to merge this recommendation into the work that the standards drafting teams are undertaking. The three groups will collaborate to determine the best methodology to set IROLs and pass those recommendations on to the standard drafting teams.

d. Which Standard Should Contain the IROL Definition and Development

The IROL SDT and the FR SDT, with the advice of the OLDTF, will determine which of the two standards would be the optimal document to contain the IROL definition and the methodology for establishing IROLs.

e. Field Test SOLs and IROLs

At the Operating Committee's March 2003 meeting, the OLDTF presented its report containing new and refined definitions reinforced by requirements and associated operating principles. These definitions included System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL), the latter of which was designed to replace the definition of Operating Security Limit. The task force also recommended a new form for reporting IROL violations that exceeded 30 minutes. The Operating Committee directed the Reliability Coordinators to "field test" the definitions of SOL and IROL for the periods May 1 through November 1, 2003, and recently extended the field test period until November 30, 2004.

The IROL SDT, FR SDT, and the OLDTF, need to discuss the positive and negative attributes to the current field test; determine enhancements based on this meeting's IROL discussion results and consensus; and recommend SOL – IROL "field test" enhancements to the OC.

f. Near-Miss Reporting

The focus of the OLDTF to date has been on developing a definition for consistent reporting of those IROL violations that are greater than 30 minutes in duration, the Task Force believes that there is a great deal of useful information in capturing "IROL – Informational Reporting". Those IROL violations that are mitigated in less than 30 minutes that would normally be unreported.

These "Informational Reports" should be investigated to identify risk levels, lessons learned and initiate operational discussions at the Reliability Coordinators WG for each event. The analysis of these reports could also assist NERC and the Regional Councils in determining the consistency of

IROL SDT, FR SDT, OLDTF Meeting Agenda
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calculation and implementation of IROLs across the various Reliability Coordinators and Control Areas on an ongoing basis. These Informational Reports will also assist in the identification of those portions of the bulk electrical system that are being stressed on a frequent basis.

Note: The OLDTF changed the report name from “Near-Miss Report” to “Informational Report.”

The IROL SDT, FR SDT, and the OLDTF, need to discuss the current IROL field test results to-date. Once the group decides how to set IROLs in the standards process, it may be necessary to have the proposed methodology “field tested” also.

g. IROL Training Documents

The OLDTF Recommendations and Next Steps, 2. NERC:OC — To direct the Personnel SC (TRWG) to develop IROL Training Document(s) for all levels of Operations staff.

The IROL SDT, FR SDT, and the OLDTF, will collaborate on ideas and concepts to pass on to the Personnel Subcommittee to develop IROL Training Document(s).

3. Future Meetings

- a. Future meetings and conference calls to be determined during the meeting

*** Participation via Conference Call ***

Conference call participation in this meeting may be accessed by following these instructions:

- Call this number: (816) 650-0669
- Follow prerecorded instructions
- Enter Access Code: 831018#

“Operate Within Limits” SDT Roster

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Standard Drafting Team Roster
Determine Facility Ratings, Operating Limits,
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Operating Limit Definition Task Force

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Lynna Estep – SERC

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Steve Myers – ERCOT

Wayne VanOsdol – MISO

Larry Kezele – NERC

Tom Vandervort – NERC

Don Benjamin – NERC

Parliamentary Procedures

Based on Robert's Rules of Order, Newly Revised, 10th Edition, plus "Organization and Procedures Manual for the NERC Standing Committees"

Motions

Unless noted otherwise, all procedures require a "second" to enable discussion.

When you want to...	Procedure	Debatable	Comments
Raise an issue for discussion	Move	Yes	The main action that begins a debate.
Revise a Motion currently under discussion	Amend	Yes	Takes precedence over discussion of main motion. Motions to amend an amendment are allowed, but not any further. The amendment must be germane to the main motion, and can not reverse the intent of the main motion.
Reconsider a Motion already approved	Reconsider	Yes	Allowed only by member who voted on the prevailing side of the original motion.
End debate	Call for the Question or End Debate	No	If the Chair senses that the committee is ready to vote, he may say "if there are no objections, we will now vote on the Motion." Otherwise, this motion is not debatable and subject to 2/3 majority approval.
Record each member's vote on a Motion	Request a Roll Call Vote	No	Takes precedence over main motion. No debate allowed, but the members must approve by 2/3 majority.
Postpone discussion until later in the meeting	Lay on the Table	Yes	Takes precedence over main motion. Used only to postpone discussion until later in the meeting.
Postpone discussion until a future date	Postpone until	Yes	Takes precedence over main motion. Debatable only regarding the date (and time) at which to bring the Motion back for further discussion.
Remove the motion for any further consideration	Postpone indefinitely	Yes	Takes precedence over main motion. Debate can extend to the discussion of the main motion. If approved, it effectively "kills" the motion. Useful for disposing of a badly chosen motion that can not be adopted or rejected without undesirable consequences.
Request a review of procedure	Point of order	No	Second not required. The Chair or secretary shall review the parliamentary procedure used during the discussion of the Motion.

Notes on Motions

Seconds. A Motion must have a second to ensure that at least two members wish to discuss the issue. The "second" is not recorded in the minutes. Neither are motions that do not receive a second.

Announcement by the Chair. The Chair should announce the Motion before debate begins. This ensures that the wording is understood by the membership. Once the Motion is announced and seconded, the Committee "owns" the motion, and must deal with it according to parliamentary procedure.

Voting

Voting Method	When Used	How Recorded in Minutes
Unanimous Consent	When the Chair senses that the Committee is substantially in agreement, and the Motion needed little or no debate. No actual vote is taken.	The minutes show "by unanimous consent."
Vote by Voice	The standard practice.	The minutes show Approved or Not Approved (or Failed).
Vote by Show of Hands (tally)	To record the number of votes on each side when an issue has engendered substantial debate or appears to be divisive. Also used when a Voice Vote is inconclusive. (The Chair should ask for a Vote by Show of Hands when requested by a member).	The minutes show both vote totals, and then Approved or Not Approved (or Failed).
Vote by Roll Call	To record each member's vote. Each member is called upon by the Secretary,, and the member indicates either "Yes," "No," or "Present" if abstaining.	The minutes will include the list of members, how each voted or abstained, and the vote totals. Those members for which a "Yes," "No," or "Present" is not shown are considered absent for the vote.

Notes on Voting

(Recommendations from DMB, not necessarily Mr. Robert)

Abstentions. When a member abstains, he is not voting on the Motion, and his abstention is not counted in determining the results of the vote. The Chair should not ask for a tally of those who abstained.

Determining the results. The results of the vote (other than Unanimous Consent) are determined by dividing the votes in favor by the total votes cast. Abstentions are not counted in the vote and shall not be assumed to be on either side.

"Unanimous Approval." Can only be determined by a Roll Call vote because the other methods do not determine whether every member attending the meeting was actually present when the vote was taken, or whether there were abstentions.

Majorities. Robert's Rules use a simple majority (one more than half) as the default for most motions. NERC uses 2/3 majority for all motions.



NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

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NERC ANTITRUST COMPLIANCE GUIDELINES

I. GENERAL

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or which might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. PROHIBITED ACTIVITIES

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.

Approved by NERC Board of Trustees
June 14, 2002

III. ACTIVITIES THAT ARE PERMITTED

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation and Bylaws are followed in conducting NERC business. Other NERC procedures that may be applicable to a particular NERC activity include the following:

- Organization Standards Process Manual
- Transitional Process for Revising Existing NERC Operating Policies and Planning Standards
- Organization and Procedures Manual for the NERC Standing Committees
- System Operator Certification Program

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

Policy 9 – Reliability Coordinator Procedures

Version 2

Subsections

- A. Responsibilities – Authorization
- B. Responsibilities – Delegation of Tasks
- C. Common Tasks for Current-Day and Next-Day Operations
- D. Next-Day Operations
- E. Current-Day Operations
- F. Emergency Operations
- G. System Restoration
- H. Coordination Agreements and Data Sharing
- I. Facility
- J. Staffing

Introduction

This document contains the process and procedures that the NERC RELIABILITY COORDINATORS are expected to follow to ensure the operational reliability of the INTERCONNECTIONS. These include:

- Planning for next-day operations, including reliability analyses (such as pre- and post-CONTINGENCY thermal monitoring, system reserves, area reserves, reactive reserves, voltage limits, stability, etc.) and identifying special operating procedures that might be needed,
- Analyzing current day operating conditions, and
- Implementing procedures (local, INTERCONNECTION-wide, or other) to mitigate SYSTEM OPERATING LIMIT (SOL) and INTERCONNECTION RELIABILITY OPERATING LIMIT (IROL) violations on the transmission system. Regardless of the process, the RELIABILITY COORDINATOR shall ensure its CONTROL AREAS return their transmission system to within INTERCONNECTED RELIABILITY OPERATING LIMITS without delay, and no longer than 30 minutes¹

RELIABILITY COORDINATORS shall have the capability to monitor their responsibilities with a WIDE AREA view perspective and calculate INTERCONNECTED RELIABILITY OPERATING LIMITS. WIDE AREA is described as the ability to monitor the complete RELIABILITY COORDINATOR AREA and may include critical flow and status information from adjacent RELIABILITY COORDINATOR AREAS as determined by detailed system studies. With this in mind it is likely that RELIABILITY COORDINATORS will discover IROL violations not normally seen by its TRANSMISSION OPERATING ENTITIES.

Terms

RELIABILITY COORDINATOR. The entity that is the highest level of authority who is responsible for the reliable operation of the BULK ELECTRIC SYSTEM, has the WIDE AREA view of the BULK ELECTRIC SYSTEM and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next day analysis and real time operations.

OPERATING AUTHORITY. An entity that:

¹ The 30-minute time period is not intended as a grace period for operating one CONTINGENCY away from instability, uncontrolled separation, or cascading outages. Some operating limit violations require mitigation much sooner.

1. Has ultimate accountability for a defined portion of the BULK ELECTRIC SYSTEM to meet one or more of three reliability objectives — generation/demand balance, transmission reliability, and/or emergency preparedness, and
2. Is accountable to NERC and its Regional Reliability Councils for complying with NERC and Regional Policies, and
3. Has the authority to control or direct the operation of generating resources, transmission facilities, or loads, to meet these Policies.

OPERATING AUTHORITIES include such entities as CONTROL AREAS, generation operators and TRANSMISSION OPERATING ENTITIES; they do not include RELIABILITY COORDINATORS.

RELIABILITY COORDINATOR AREA. That portion of the Bulk Electric System under the purview of the Reliability Coordinator.

OPERATING AUTHORITY AREA. That portion of the Bulk Electric System under the purview of the Operating Authority that is contained within a Reliability coordinator area.

BURDEN. Operation of the Bulk Electric System that violates or is expected to violate a SOL or IROL in the Interconnection or that violates any other NERC, Regional, or local operating reliability policies or standards.

WIDE AREA. The entire Reliability Coordinator Area as well as the critical flow and status information from adjacent Reliability Coordinator Areas as determined by detailed system studies to allow the calculation of Interconnected Reliability Operating Limits.

CONTINGENCY. The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element. A Contingency also may include multiple components that are related by situations leading to simultaneous component outages.

SYSTEM OPERATING LIMIT (SOL). The value (such as MW, MVar, Amperes, Frequency or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain operating criteria. These include, but are not limited to:

- Facility Ratings (Applicable pre- and post-CONTINGENCY equipment or facility ratings)
- Transient Stability Ratings (Applicable pre- and post-CONTINGENCY Stability Limits)
- Voltage Stability Ratings (Applicable pre- and post-CONTINGENCY Voltage Stability)
- System Voltage Limits (Applicable pre- and post-CONTINGENCY Voltage Limits)

INTERCONNECTION RELIABILITY OPERATING LIMIT (IROL). The value (such as MW, MVar, Amperes, Frequency or Volts) derived from, or a subset of the SYSTEM OPERATING LIMITS, which if exceeded, could expose a widespread area of the BULK ELECTRIC SYSTEM to instability, uncontrolled separation(s) or cascading outages.

A. Responsibilities – Authorization

Requirements

1. **RELIABILITY COORDINATOR responsibilities.** The RELIABILITY COORDINATOR is responsible for the reliable operation of its RELIABILITY COORDINATOR AREA within the BULK ELECTRIC SYSTEM in accordance with NERC, Regional and sub-Regional practices.
 - The RELIABILITY COORDINATOR is responsible for having the WIDE AREA view, the operating tools, processes and procedures, including the authority, to prevent or mitigate emergency operating situations in both next-day analysis and during real-time conditions.
 - The RELIABILITY COORDINATOR shall have clear decision-making authority to act and to direct actions to be taken by other OPERATING AUTHORITIES within its RELIABILITY COORDINATOR AREA to preserve the integrity and reliability of the BULK ELECTRIC SYSTEM. These actions shall be taken without delay, and no longer than 30 minutes²
 - The RELIABILITY COORDINATOR shall not delegate its responsibilities to other OPERATING AUTHORITIES or entities.
2. **Serving the interests of the RELIABILITY COORDINATOR AREA and the INTERCONNECTION.** The RELIABILITY COORDINATOR shall act in the interests of reliability for the overall RELIABILITY COORDINATOR AREA and its INTERCONNECTION before the interests of any other entity (CONTROL AREA, TRANSMISSION OPERATING ENTITY, PURCHASING-SELLING ENTITY, etc.).
3. **Compliance with RELIABILITY COORDINATOR directives.** All OPERATING AUTHORITIES shall comply with RELIABILITY COORDINATOR directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. Under these circumstances the OPERATING AUTHORITY must immediately inform the RELIABILITY COORDINATOR of the inability to perform the directive so that the RELIABILITY COORDINATOR may implement alternate remedial actions.
4. **Reliability Plan approval.** The NERC Operating Committee must approve the RELIABILITY COORDINATOR or Regional Reliability Plan.

² The 30-minute time period is not intended as a grace period for operating one CONTINGENCY away from instability, uncontrolled separation, or cascading outages. Some operating limit violations require mitigation much sooner.

B. Responsibilities – Delegation of Tasks

Requirements

1. **Delegating tasks.** The RELIABILITY COORDINATOR may delegate tasks to other OPERATING AUTHORITIES and entities, but this delegation must be accompanied by formal operating agreements. The RELIABILITY COORDINATOR shall ensure that all delegated tasks are understood, communicated, and addressed by all OPERATING AUTHORITIES within its RELIABILITY COORDINATOR AREA.
2. **Designating delegation.** The RELIABILITY COORDINATOR or Regional Reliability Plan must list all OPERATING AUTHORITIES and entities to which RELIABILITY COORDINATOR tasks have been delegated.
3. **Requirements for certified operators.** OPERATING AUTHORITIES and entities must ensure that these delegated tasks are carried out by NERC-certified RELIABILITY COORDINATOR operators.
4. **Auditing delegated tasks.** Entities that accept delegation of RELIABILITY COORDINATOR tasks, may have these tasks audited under the NERC RELIABILITY COORDINATOR audit program.

C. Common Tasks for Next-Day and Current-Day Operations

Requirements

1. In all time frames RELIABILITY COORDINATORS are responsible for the following:
 - **Assessing CONTINGENCY situations.** The RELIABILITY COORDINATOR shall coordinate operations in regards to SOLS and IROLS for real time and next day operations for its RELIABILITY COORDINATOR AREA including thermal, voltage and stability related analysis. Assessments shall be conducted, up to and including next-day, at the CONTROL AREA level with any identified potential SOL violations reported to the RELIABILITY COORDINATOR. The RELIABILITY COORDINATOR is to ensure that its WIDE AREA view is modeled to ensure coordinated operations.
 - **Determining IROLS.** The RELIABILITY COORDINATOR shall determine IROLS based on local, regional and interregional studies. The RELIABILITY COORDINATOR must be aware that an IROL violation can be created during multiple, normally non-critical outage conditions and, as such, the RELIABILITY COORDINATOR must be knowledgeable of events that could lead to such an occurrence. The RELIABILITY COORDINATOR is responsible for disseminating this information within its RELIABILITY COORDINATOR AREA and to neighboring RELIABILITY COORDINATORS.
 - **Assuring OPERATING AUTHORITIES shall not BURDEN others.** The RELIABILITY COORDINATOR shall ensure that all OPERATING AUTHORITIES will operate to prevent the likelihood that a disturbance, action, or non-action in its RELIABILITY COORDINATOR AREA will result in a SOL or IROL violation in another area of the INTERCONNECTION. Doing otherwise is considered a BURDEN that one OPERATING AUTHORITY places on another. In instances where there is a difference in derived limits, the BULK ELECTRIC SYSTEM shall always be operated by the RELIABILITY COORDINATOR and its OPERATING AUTHORITIES to the most limiting parameter.
 - **Operating under known conditions.** The RELIABILITY COORDINATORS shall ensure OPERATING AUTHORITIES always operate their OPERATING AUTHORITY AREA under known and studied conditions and also ensure they reassess and reposture their systems following CONTINGENCY events without delay, and no longer than 30 minutes³, regardless of the number of CONTINGENCY events that occur or the status of their monitoring, operating and analysis tools.
 - **Total Transfer Capability or Available Transfer Capability and transmission coordination.** The RELIABILITY COORDINATOR shall make known to OPERATING AUTHORITIES within its RELIABILITY COORDINATOR AREA, SOLs or IROLS within its WIDE AREA view. The OPERATING AUTHORITY shall respect these SOLs or IROLS in accordance with filed tariffs and regional TTC/ATC calculation processes.

³ The 30-minute time period is not intended as a grace period for operating one CONTINGENCY away from instability, uncontrolled separation, or cascading outages. Some operating limit violations require mitigation much sooner.

- **Communications.** The RELIABILITY COORDINATOR shall issue directives in a clear, concise, definitive manner. The RELIABILITY COORDINATOR shall receive a response from the person receiving the directive that repeats the information given. The RELIABILITY COORDINATOR shall acknowledge the statement as correct or repeat the original statement to resolve misunderstandings.

D. Next-Day Operations

Requirements

1. **Performing reliability analysis and system studies.** The RELIABILITY COORDINATOR shall conduct next-day reliability analyses for its RELIABILITY COORDINATOR AREA to ensure that the BULK ELECTRIC SYSTEM can be operated reliably in anticipated normal and CONTINGENCY event conditions.
 - **Contingency analysis.** The RELIABILITY COORDINATOR shall conduct CONTINGENCY analysis studies to identify potential interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc.
 - **Considering parallel flows.** The RELIABILITY COORDINATOR shall pay particular attention to parallel flows to ensure one RELIABILITY COORDINATOR AREA does not place an unacceptable or undue BURDEN on an adjacent RELIABILITY COORDINATOR AREA.
2. **Sharing information.** Each OPERATING AUTHORITY in the RELIABILITY COORDINATOR AREA shall provide information required for system studies, such as critical facility status, load, generation, operating reserve projections, and known INTERCHANGE TRANSACTIONS. This information shall be available by 1200 Central Standard Time for the Eastern INTERCONNECTION, and 1200 Pacific Standard Time for the Western INTERCONNECTION.
3. **Developing action plans.** The RELIABILITY COORDINATOR shall, in conjunction with its OPERATING AUTHORITIES, develop action plans that may be required including reconfiguration of the transmission system, redispatching of generation, reduction or curtailment of INTERCHANGE TRANSACTIONS, or reducing load to return transmission loading to within acceptable SOLs or IROLs.
4. **Sharing study results.** The RELIABILITY COORDINATOR shall share the results of its system studies, when conditions warrant or upon request, with other RELIABILITY COORDINATORS, and OPERATING AUTHORITIES within its RELIABILITY COORDINATION AREA. Study results shall be available no later than 1500 Central Standard Time for the Eastern INTERCONNECTION, and 1500 Pacific Standard Time for the Western INTERCONNECTION, unless circumstances warrant otherwise.
5. **Communication of results of next-day reliability analyses.** Whenever conditions warrant, the RELIABILITY COORDINATOR shall initiate a conference call or other appropriate communications to address the results of its reliability analyses.
6. **Alerts.** If the results of these studies indicate potential SOL or IROL violations, the RELIABILITY COORDINATORS shall issue the appropriate alerts via the Reliability Coordinator Information System (RCIS) and direct their OPERATING AUTHORITIES to take any necessary action the RELIABILITY COORDINATOR deems appropriate to address the potential SOL or IROL violation.
7. **Operating Authority Response.** OPERATING AUTHORITIES shall comply with the directives of its RELIABILITY COORDINATOR based on the next day assessments in the same manner in which the OPERATING AUTHORITY would comply during real time operating events.

E. Current-Day Operations

Requirements

1. Monitoring and Coordination

- **WIDE AREA view.** The RELIABILITY COORDINATOR shall monitor all BULK ELECTRIC SYSTEM facilities within its RELIABILITY COORDINATOR AREA and adjacent RELIABILITY COORDINATOR AREAS as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the RELIABILITY COORDINATOR is able to determine any potential SOL and IROL violations within its RELIABILITY COORDINATOR AREA. This responsibility may require RELIABILITY COORDINATORS to receive sub-transmission information not normally monitored by their Energy Management System to assist in IROL determination.
- **WIDE AREA view – coordination.** When a neighboring RELIABILITY COORDINATOR is aware of an external operational concern, such as declining voltages, excessive reactive flows, or an IROL violation, the neighboring RELIABILITY COORDINATOR shall contact the RELIABILITY COORDINATOR in whose RELIABILITY COORDINATOR AREA the operational concern was observed. They shall coordinate any actions, including emergency assistance, required by the RELIABILITY COORDINATOR in mitigating the operational concern.
- **Facility status.** The RELIABILITY COORDINATOR must know the status of all current critical facilities whose failure, degradation, or disconnection could result in an SOL or IROL violation. RELIABILITY COORDINATORS must also know the status of any facilities that may be required to assist area restoration objectives.
- **Situational awareness.** The RELIABILITY COORDINATOR shall be continuously aware of conditions within its RELIABILITY COORDINATOR AREA and include this information in its reliability assessments. To accomplish this objective the RELIABILITY COORDINATOR shall monitor its RELIABILITY COORDINATOR AREA parameters, including but not limited to the following:
 - Current status of BULK ELECTRIC SYSTEM elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems and system loading)
 - Current pre-CONTINGENCY element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate an SOL or IROL violation including the plan's viability and scope
 - Current post- CONTINGENCY element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate an SOL or IROL including the plan's viability and scope
 - System real and reactive reserves (actual versus required)
 - Capacity and energy adequacy conditions
 - Current ACE for all its CONTROL AREAS

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- Current local or TLR procedures in effect
- Planned generation dispatches
- Planned transmission or generation outages
- CONTINGENCY events
- **BULK ELECTRIC SYSTEM monitoring.** The RELIABILITY COORDINATOR shall monitor BULK ELECTRIC SYSTEM parameters that may have significant impacts upon the RELIABILITY COORDINATOR AREA and with neighboring RELIABILITY COORDINATOR AREAS with respect to:
 - **INTERCHANGE TRANSACTION information.** The RELIABILITY COORDINATOR shall be aware of all INTERCHANGE TRANSACTIONS that wheel-through, source, or sink in its RELIABILITY COORDINATOR AREA and make that INTERCHANGE TRANSACTION information available to all RELIABILITY COORDINATORS in the INTERCONNECTION. (Note: This requirement is satisfied by the Interchange Distribution Calculator and E-Tag process for the Eastern INTERCONNECTION.)
 - **Pending INTERCHANGE SCHEDULES to identify potential flow impacts.** As portions of the transmission system approach or exceed SOLS or IROLS, the RELIABILITY COORDINATOR shall work with the OPERATING AUTHORITIES to evaluate and assess any additional INTERCHANGE SCHEDULES that would violate those limits. If the potential or actual IROL violation cannot be avoided through proactive intervention, the RELIABILITY COORDINATOR shall initiate control actions or emergency procedures to relieve the violation without delay, and no longer than 30 minutes⁴. All resources, including load shedding shall be available to the RELIABILITY COORDINATOR in addressing a potential or actual SOL or IROL violation.
 - **Availability or shortage of OPERATING RESERVES needed to maintain reliability.** The RELIABILITY COORDINATOR shall monitor CONTROL AREA parameters to ensure that the required amount of OPERATING RESERVES are provided and available as required to meet NERC Control Performance Standard and Disturbance Control Standards requirements. If necessary, the RELIABILITY COORDINATOR shall direct the CONTROL AREAS in the RELIABILITY COORDINATOR AREA to arrange for assistance from neighboring areas (CONTROL AREAS, REGIONS, etc.). The RELIABILITY COORDINATOR shall issue ENERGY EMERGENCY Alerts, as needed, and at the request of LOAD SERVING ENTITIES.
 - **Actual flows versus limits.** The RELIABILITY COORDINATOR shall identify the cause of the potential or actual IROL violations and initiate the control action or emergency procedure to relieve the potential or actual IROL violation without delay, and no longer than 30 minutes⁵. All resources, including load shedding,

⁴ The 30-minute time period is not intended as a grace period for operating one CONTINGENCY away from instability, uncontrolled separation, or cascading outages. Some operating limit violations require mitigation much sooner.

⁵ The 30-minute time period is not intended as a grace period for operating one CONTINGENCY away from instability, uncontrolled separation, or cascading outages. Some operating limit violations require mitigation much sooner.

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shall be available to the RELIABILITY COORDINATOR in addressing a SOL or IROL violation.

- **Time error correction and GMD notification.** The RELIABILITY COORDINATOR will communicate start and end times for time error corrections to the CONTROL AREAS within its RELIABILITY AREA. The RELIABILITY COORDINATOR will ensure all CONTROL AREAS are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.
- **RELIABILITY COORDINATOR coordination with other Regions.** The RELIABILITY COORDINATOR shall participate in NERC Hotline discussions, assist in the assessment of reliability of the Regions and the overall interconnected system, and coordinate actions in anticipated or actual emergency situations. The RELIABILITY COORDINATOR will disseminate information within its RELIABILITY COORDINATOR AREA.
- **System frequency and resolution of significant frequency errors, deviations, and real-time trends.** The RELIABILITY COORDINATOR shall monitor system frequency and its CONTROL AREAS' performance and direct any necessary rebalancing to return to CPS and DCS compliance. All resources, including firm load shedding, shall be utilized as directed by a RELIABILITY COORDINATOR to relieve the emergent condition.
- **Sharing with other RELIABILITY COORDINATORS any information regarding potential, expected, or actual critical operating conditions that could negatively impact other RELIABILITY COORDINATOR AREAS.** The RELIABILITY COORDINATOR shall coordinate with other RELIABILITY COORDINATORS and CONTROL AREAS, as needed, to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS or DCS violations. This would include coordination of pending generation and transmission maintenance outages in both the real time and next day reliability analysis timeframes.
- **Availability or shortage of Interconnected Operations Services required (in applicable RELIABILITY COORDINATOR AREAS).** As necessary, the RELIABILITY COORDINATOR shall assist the CONTROL AREAS in its RELIABILITY AREA in arranging for assistance from neighboring RELIABILITY COORDINATOR AREAS or CONTROL AREAS.
- **Individual CONTROL AREA or RELIABILITY COORDINATOR AREA ACE (in applicable RELIABILITY AREAS).** The RELIABILITY COORDINATOR will identify sources of large AREA CONTROL ERRORS that may be contributing to frequency, time error, or inadvertent interchange and will discuss corrective actions with the appropriate CONTROL AREA operator. If a frequency, time error, or inadvertent problem occurs outside of the RELIABILITY COORDINATOR AREA, the RELIABILITY COORDINATOR will initiate a NERC Hotline call to discuss the frequency, time error, or inadvertent interchange with other RELIABILITY COORDINATORS. The RELIABILITY COORDINATOR shall direct its CONTROL AREAS to comply with CPS and DCS as indicated in section 1.4.7 above.

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- **Use of Special Protection Systems (in applicable RELIABILITY COORDINATOR AREAS).** Whenever a Special Protection System that may have an inter-CONTROL AREA or inter-RELIABILITY COORDINATOR AREA impact (e.g. could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the RELIABILITY COORDINATORS shall be aware of the impact of the operation on inter-Area flows. The RELIABILITY COORDINATOR shall be kept informed of the status of the Special Protection System including any degradation or potential failure to operate as expected.
- **Communication with RELIABILITY COORDINATORS of potential problems.** The RELIABILITY COORDINATOR who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its RELIABILITY COORDINATOR AREA shall issue an alert to all CONTROL AREAS and TRANSMISSION OPERATING ENTITIES in its RELIABILITY AREA, and all RELIABILITY COORDINATORS within the INTERCONNECTION via the Reliability Coordinator Information System without delay. The RELIABILITY COORDINATOR will disseminate this information to its OPERATING AUTHORITIES.
- **Provide other coordination services as appropriate and as requested by the CONTROL AREAS within its RELIABILITY COORDINATOR AREA and neighboring RELIABILITY COORDINATOR AREAS.** The RELIABILITY COORDINATOR shall confirm reliability assessment results and determine the effects within its own and adjacent RELIABILITY COORDINATOR AREAS. This action includes discussing options to mitigate potential or actual SOL or IROL violations and taking actions as necessary as to always act in the best interests of the INTERCONNECTION at all times.

F. Emergency Operations

Requirements

1. **Mitigating SOL and IROL violations.** Regardless of the process it uses, the RELIABILITY COORDINATOR shall direct its OPERATING AUTHORITIES to return the transmission system to within the IROL as soon as possible, but no longer than 30 minutes. With this in mind, RELIABILITY COORDINATORS and their OPERATING AUTHORITIES must be aware that Transmission Loading Relief (TLR) procedures may not be able to mitigate the SOL or IROL violation in a timely fashion. Under these circumstances other actions such as reconfiguration, redispach or load shedding may be necessary until the relief requested by the TLR process is achieved. In these instances the RELIABILITY COORDINATOR shall direct and OPERATING AUTHORITIES shall comply with the more timely requests.
2. **Implementing emergency procedures.** If the RELIABILITY COORDINATOR deems that IROL violations are imminent, the RELIABILITY COORDINATOR shall have the authority and obligation to immediately direct its OPERATING AUTHORITIES to redispach generation, reconfigure transmission, manage INTERCHANGE TRANSACTIONS, or reduce system demand to mitigate the IROL violation until INTERCHANGE TRANSACTIONS can be reduced utilizing a transmission loading relief procedure, or other procedures, to return the system to a reliable state. The RELIABILITY COORDINATOR shall coordinate these emergency procedures with other RELIABILITY COORDINATORS as needed. [See also Policy 5, “Emergency Operations”]
3. **Implementing relief procedures.** If transmission loading progresses or is projected to violate a SOL or IROL, the RELIABILITY COORDINATOR will perform the following procedures as necessary:
 - **Selecting transmission loading relief procedure.** The RELIABILITY COORDINATOR experiencing a potential or actual SOL or IROL violation on the transmission system within its RELIABILITY COORDINATOR AREA shall, at its discretion, select from either a “local” (Regional, Interregional, or subregional) transmission loading relief procedure or an INTERCONNECTION-wide procedure, such as those listed in Appendix 9C1, 9C2, or 9C3
 - **Using local transmission loading relief procedure.** The RELIABILITY COORDINATOR may use local transmission loading relief or congestion management procedures, provided the TRANSMISSION OPERATING ENTITY experiencing the potential or actual SOL or IROL violation is a party to those procedures.
 - **Using a local procedure with an INTERCONNECTION-wide procedure.** A RELIABILITY COORDINATOR may implement a local transmission loading relief or congestion management procedure simultaneously with an INTERCONNECTION-wide procedure. However, the RELIABILITY COORDINATOR is obligated to follow the curtailments as directed by the INTERCONNECTION-wide procedure. If the RELIABILITY COORDINATOR desires to use a local procedure *as a substitute* for curtailments as directed by the INTERCONNECTION-wide procedure, it may do so only if such use is approved by the NERC Operating Reliability Subcommittee and Operating Committee.
 - **Complying with procedures.** When implemented, all RELIABILITY COORDINATORS shall comply with the provisions of the INTERCONNECTION-wide procedure. This may include action by RELIABILITY COORDINATORS in other INTERCONNECTIONS to, for

F. Emergency Operations Requirements

example, curtail an INTERCHANGE TRANSACTION that crosses an INTERCONNECTION boundary.

- **Complying with interchange policies.** During the implementation of relief procedures, and up to the point that emergency action is necessary, RELIABILITY COORDINATORS and OPERATING AUTHORITIES shall comply with the Requirements of Policy 3, Section C, “Interchange Schedule Standards.”
- 4. Determining causes of Interconnection frequency error.** Any RELIABILITY COORDINATOR noticing an INTERCONNECTION frequency error in excess of 0.03 Hz (Eastern INTERCONNECTION) or 0.05 Hz (Western and ERCOT INTERCONNECTIONS) for more than 20 minutes shall initiate a NERC Hotline conference call, or notification via the Reliability Coordinator Information System, to determine the CONTROL AREA(S) with the energy emergency or control problem.
- If a RELIABILITY COORDINATOR determines that one or more of its CONTROL AREAS is contributing to the frequency error, the RELIABILITY COORDINATOR shall direct those CONTROL AREA(S) to immediately comply with CPS and DCS requirements by using all resources available to it, including load shedding. The CONTROL AREA(S) shall comply with the RELIABILITY COORDINATOR request.
- 5. Authority to provide emergency assistance.** The RELIABILITY COORDINATOR shall have the authority to take or direct whatever action is needed, including load shedding, to mitigate an energy emergency within its RELIABILITY COORDINATOR AREA. OPERATING AUTHORITIES shall ensure the directive of the RELIABILITY COORDINATOR is implemented. RELIABILITY COORDINATORS shall provide assistance to other RELIABILITY COORDINATORS experiencing an energy emergency in accordance with Appendix 5C, Subsection A, “Energy Emergency Alerts.”
- 6. Communication of Energy Emergencies.** The RELIABILITY COORDINATOR that is experiencing a potential or actual Energy Emergency within any CONTROL AREA, RESERVE-SHARING GROUP, or LOAD-SERVING ENTITY within its RELIABILITY COORDINATOR AREA shall initiate an Energy Emergency Alert as detailed in Appendix 5C, Subsection A – “Energy Emergency Alert Levels.” The RELIABILITY COORDINATOR shall also act to mitigate the emergency condition, including a request for emergency assistance if required.

G. System Restoration

Requirements

1. **Operating Authority restoration plans.** The RELIABILITY COORDINATOR shall be aware of each OPERATING AUTHORITY'S restoration plan in its RELIABILITY COORDINATOR AREA in accordance with NERC and Regional requirements. During system restoration, the RELIABILITY COORDINATOR shall monitor restoration progress and coordinate any needed assistance.
2. **Reliability Coordinator restoration plan.** The RELIABILITY COORDINATOR shall have a RELIABILITY COORDINATOR AREA restoration plan that provides coordination between individual OPERATING AUTHORITY restoration plans and that ensures reliability is maintained during system restoration events.
3. **Reliability Coordinator is the primary contact.** The RELIABILITY COORDINATOR shall serve as the primary contact for disseminating information regarding restoration to neighboring RELIABILITY COORDINATORS and OPERATING AUTHORITIES not immediately involved in restoration.
4. **Re-synchronizing islands.** RELIABILITY COORDINATORS shall approve, communicate, and coordinate the re-synchronizing of major system islands or synchronizing points so as not to BURDEN adjacent OPERATING AUTHORITIES or RELIABILITY COORDINATOR AREAS.
 - **Reestablishing normal operations.** The RELIABILITY COORDINATOR shall take actions to restore normal operations once an operating emergency has been mitigated in accordance with its restoration plan.

H. Coordination Agreements and Data Sharing

Requirements

- 1. Coordination agreements.** The RELIABILITY COORDINATOR must have clear, comprehensive coordination agreements with adjacent RELIABILITY COORDINATORS to ensure that SOL or IROL violation mitigation requiring actions in adjacent RELIABILITY COORDINATOR AREAS are coordinated.
- 2. Data requirements.** The RELIABILITY COORDINATOR shall determine the data requirements to support its reliability coordination tasks and shall request such data from its OPERATING AUTHORITIES or adjacent RELIABILITY COORDINATORS, in accordance with the provisions of Policy 4, “System Coordination.”
- 3. Data exchange.** The RELIABILITY COORDINATOR or its OPERATING AUTHORITIES shall provide, or arrange provisions for, data exchange to other RELIABILITY COORDINATORS or OPERATING AUTHORITIES via the Interregional Security Network or RCIS network as required by NERC policy.

I. Facility

Requirements

1. RELIABILITY COORDINATORS shall have the facilities to perform their responsibilities, including:
 - **Communications.** RELIABILITY COORDINATORS shall have adequate communications (voice and data links) to appropriate entities within its RELIABILITY COORDINATOR AREA, which are staffed and available to act in addressing a real time emergency condition.
 - **Timely dissemination of information.** This includes multi directional capabilities between an OPERATING AUTHORITY and its RELIABILITY COORDINATOR and also from a RELIABILITY COORDINATOR to its neighboring RELIABILITY COORDINATOR(S) for both voice and data exchange as required to meet reliability needs of the INTERCONNECTION.
 - **Monitoring capability.** Detailed real-time monitoring capability of the RELIABILITY COORDINATOR AREA and sufficient monitoring capability of the surrounding RELIABILITY COORDINATOR AREAS to ensure that potential or actual SOL or IROL violations are identified. Monitoring systems shall provide information that can be easily understood and interpreted by the RELIABILITY COORDINATOR, giving particular emphasis to alarm management and awareness systems, automated data transfers, synchronized information systems, over a redundant and highly reliable infrastructure.
 - RELIABILITY COORDINATORS shall monitor BULK ELECTRIC SYSTEM elements (generators, transmission lines, busses, transformers, breakers, etc.) that could result in SOL or IROL violations within its RELIABILITY COORDINATOR AREA. This monitoring overview shall include both real and reactive power system flows, and OPERATING RESERVES, and the status of BULK ELECTRIC SYSTEM elements that are or could be critical to SOLs and IROLs and system restoration requirements within its RELIABILITY COORDINATOR AREA.
 - **Study and analysis tools.**
 - **Analysis tools.** The RELIABILITY COORDINATOR shall have adequate analysis tools such as State Estimation, pre- and post-CONTINGENCY analysis capabilities (thermal, stability, and voltage) and WIDE AREA overview displays.
 - **Continuous monitoring of RELIABILITY COORDINATOR AREA.** The RELIABILITY COORDINATOR shall continuously monitor its RELIABILITY COORDINATOR AREA. This includes the provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Backup provisions shall ensure SOL and IROL monitoring and derivations continues if the main monitoring system is unavailable.
 - **Availability of analysis capabilities.** RELIABILITY COORDINATOR analysis tools shall be under the control of the RELIABILITY COORDINATOR, including approvals for planned maintenance. Procedures shall be in place to mitigate the affects of analysis tool outages.

J. Staffing

Requirements

1. RELIABILITY COORDINATORS shall have adequate staff and facilities:
 - **Staffing and training.** The RELIABILITY COORDINATOR shall be staffed with adequately trained and NERC-Certified RELIABILITY COORDINATOR operators, 24 hours/day, seven days/week. The RELIABILITY COORDINATOR must have detailed knowledge of its RELIABILITY COORDINATOR AREA, its facilities, and associated OPERATING AUTHORITIES' processes including emergency procedures and restoration objectives. Training for RELIABILITY COORDINATOR operators shall meet or exceed a minimum of 5 days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel.
 - **Knowledge of the RELIABILITY COORDINATOR AREA.** The RELIABILITY COORDINATOR shall have a comprehensive understanding of its RELIABILITY COORDINATOR AREA and interaction with neighboring RELIABILITY COORDINATOR AREAS. Although OPERATING AUTHORITIES have the most detailed knowledge of their particular systems, the RELIABILITY COORDINATOR must have an extensive understanding of the OPERATING AUTHORITIES within its RELIABILITY COORDINATOR AREA, such as staff, operating practices and procedures, restoration priorities and objectives, outage plans, equipment capabilities and restrictions. The RELIABILITY COORDINATOR shall place particular attention on SOLs and IROLs and intertie facility limits. The RELIABILITY COORDINATOR shall ensure protocols are in place to allow the RELIABILITY COORDINATOR to have the best available information at all times.
 - **Standards of Conduct.** The entity responsible for the RELIABILITY COORDINATOR function shall sign and adhere to the NERC RELIABILITY COORDINATOR Standards of Conduct.

The minimum training requirements will be moved to Policy 8 upon its next revision.

Operate Within Interconnection Reliability Operating Limits Standard

Definitions

Bulk Electric System: A term commonly applied to the portion of an electric utility system that encompasses the electrical generation resources and high-voltage transmission system (above 35 kV or as approved in a tariff filed with FERC).

Cascading Outages: The uncontrolled successive loss of system elements triggered by an incident at any location that results in the loss of 300 MW or more of networked system load for a minimum of 15 minutes.

Generator Owner: The entity that owns the generator.

Instability: The inability of the transmission system to maintain a state of equilibrium during normal and abnormal system conditions or disturbances.

Interconnection Reliability Operating Limit: A system operating limit which, if exceeded, could lead to instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the bulk electric system.

Interconnection Reliability Operating Limit Event: An instance of exceeding an Interconnection Reliability Operating Limit for any length of time.

Interconnection Reliability Operating Limit Event Duration: The length of time an Interconnection Reliability Operating Limit is exceeded. The duration is measured from the point where the limit is first exceeded and ends when the value drops below the limit and remains below the limit for at least 30 seconds.

Occurrence Period: The time period in which performance is measured and evaluated.

Performance-reset Period: The time period that the entity being assessed must operate without any violations to reset the level of non-compliance to zero.

Operational Planning Analysis: An analysis of the expected system conditions for the next day's operation and up to 12 months ahead. Expected system conditions include things such as load forecast(s), generation output levels, and known system constraints (transmission facility outages, generator outages, equipment limitations, etc.).

Real-time: Present time as opposed to future time.

Real-time Assessment: An examination of existing and expected system conditions, conducted by collecting and reviewing immediately available data.

Real-time Data: Real-time measured values, state estimator values derived from the measured values, or other calculated values derived from the measured values — may include directly monitored data, Inter-utility data exchange (e.g., Interconnection Control Area Communication Protocol or SCADA Data), and manually collected data.

Real-time Monitoring: The act of scanning data and drawing conclusions about what the data indicates.

Operate Within Interconnection Reliability Operating Limits Standard

Reliability Authority Area: The collection of generation, transmission, and loads within the boundaries of the organization performing the Reliability Authority function. Its boundary coincides with one or more Balancing Authority areas.

Self-certification: A process by which an entity does a self-evaluation to determine if it is compliant with the specific requirements for a reliability standard.

T_v : The maximum time that an Interconnection Reliability Operating Limit can be exceeded before the risk to the interconnection becomes greater than acceptable. T_v may not be greater than 30 minutes.

Transmission Operator: The entity that operates the transmission facilities and executes switching orders.

Uncontrolled Separation: The unplanned break-up of an interconnection, or portion of an interconnection, that is not the result of automatic action by a special protection system or remedial action scheme operating correctly.

Wide-Area Impact: The impact of a single incident resulting in the uncontrolled loss of 300 MW or more of networked system load for a minimum of 15 minutes.

200 — Operate Within Interconnection Reliability Operating Limits

- 201 Interconnection Reliability Operating Limit Identification
- 202 Monitoring
- 203 Analyses and Assessments
- 204 Actions
- 205 Data Specification and Collection
- 206 Data Provision
- 207 Processes, Procedures, or Plans
- 208 Reliability Authority Directives

1. Purpose: To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the bulk electric system.
2. Effective Date: This standard will become effective three months after the latter of either the date the NERC Board of Trustees votes to adopt the Determine Facility Ratings, System Operating Limits, and Transfer Capabilities Standard or three months after the date the NERC Board of Trustees votes to adopt this standard.

Initial Compliance with the individual requirements will be phased in as follows:

- 201 — Interconnection Reliability Operating Limit Identification — six months from implementation of Requirement 604.
- 202 — Monitoring — six months from implementation of Requirement 604.
- 203 — Analyses and Assessments — six months from implementation of Requirement 604.
- 204 — Actions — six months from implementation of Requirement 604.
- 205 — Data Specification & Collection — nine months from implementation of Requirement 604.
- 206 — Data Provision — 12 months from implementation of Requirement 604.
- 207 — Processes, Procedures, or Plans — six months from implementation of Requirement 604.
- 208 — Reliability Authority Directives — nine months from implementation of Requirement 604.

3. Applicability: These requirements apply to entities performing various electric system functions, as defined in the Functional Model. NERC is now developing standards and procedures for the identification and certification of such entities. Until that identification and certification is complete, this standard applies to the existing entities (such as control areas, transmission owners and operators, and generator owners) that are currently performing the defined functions.

In this standard, the terms Balancing Authority, Generator Operator, Generator Owner, Interchange Authority, Load-serving Entity, Reliability Authority, Transmission Operator, and

Operate Within Interconnection Reliability Operating Limits Standard

Transmission Owner refer to the entities performing these functions as defined in the Functional Model.

201 — Interconnection Reliability Operating Limits Identification

(a) Requirements

- (1) The Reliability Authority shall identify and document which Facilities (or groups of Facilities) in its Reliability Authority Area are subject to Interconnection Reliability Operating Limits¹.
 - (i) All Reliability Authorities that share a Facility (or group of Facilities) shall agree on whether that Facility (or group of Facilities) is (are) subject to Interconnection Reliability Operating Limits.
- (2) The Reliability Authority shall identify Interconnection Reliability Operating Limits for its Reliability Authority Area. Each Interconnection Reliability Operating Limit shall have a T_v that is smaller than or equal to 30 minutes.
- (3) All Reliability Authorities that share a Facility (or group of Facilities) subject to an Interconnection Reliability Operating Limit shall agree upon the process used to determine that Interconnection Reliability Operating Limit and its associated T_v .

(b) Measures

- (1) The Reliability Authority shall have a list of Facilities (or group of Facilities) in its Reliability Authority Area that are subject to Interconnection Reliability Operating Limits.
 - (i) The Reliability Authority shall have evidence it has reviewed and updated its list of Facilities (or groups of Facilities) to reflect changes in its Reliability Authority Area's system topology.
- (2) The Reliability Authority shall be able to identify the current values of the Interconnection Reliability Operating Limits it monitors. Each of these Interconnection Reliability Operating Limits shall have a T_v that is smaller than or equal to 30 minutes.
 - (i) The Reliability Authorities that share a Facility (or group of Facilities) shall have an agreed upon process for determining if that Facility (or group of Facilities) is subject to an Interconnection Reliability Operating Limit and for determining the value of that Interconnection Reliability Operating Limit and its associated T_v .
- (3) The Reliability Authority shall be able to demonstrate that its Interconnection Reliability Operating Limit values and their T_v reflect current system conditions.

(c) Regional Differences

None identified.

¹ Each Interconnection Reliability Operating Limit is developed by following the requirements in the Determine Facility Ratings, System Operating Limits, and Transfer Capabilities Standard.

(d) Compliance Monitoring Process

- (1) The Reliability Authority shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period shall be 12 months from the last violation. The Reliability Authority shall keep data on facilities and limits for three calendar years. The Compliance Monitor shall keep audited data for three calendar years.
- (3) The Reliability Authority shall have the following available upon the request of its Compliance Monitor:
 - (i) List of Facilities (or group of Facilities) in its Reliability Authority Area that are subject to Interconnection Reliability Operating Limits. The list shall be contained on paper, displayed through an Energy Management System, or via another data source.
 - (ii) Evidence that the list of Facilities (or group of Facilities) subject to Interconnection Reliability Operating Limits was updated.
 - (ii) An agreed upon process for determining if a shared Facility (or group of Facilities) is subject to an Interconnection Reliability Operating Limit and for determining the value of that Interconnection Reliability Operating Limit and its associated T_v .
- (4) The Reliability Authority shall demonstrate that it can identify the current values of the Interconnection Reliability Operating Limits it monitors and shall show that each of these Interconnection Reliability Operating Limits shall have a T_v that is smaller than or equal to 30 minutes.

(e) Levels of Noncompliance

- (1) Level One: No process for determining if shared Facilities (or groups of Facilities) are subject to Interconnection Reliability Operating Limits and for determining the value of that Interconnection Reliability Operating Limit and its associated T_v .
- (2) Level Two: No evidence that a shared Facility (or group of Facilities) has an Interconnection Reliability Operating Limit with a T_v that has been agreed to by all Reliability Authorities that share the Facility (or group of Facilities).
- (3) Level Three: A level three noncompliance occurs if either of the following conditions are present:
 - (i) One or more Interconnection Reliability Operating Limits had a T_v that was greater than 30 minutes.
 - (ii) No evidence that the list of Facilities (or groups of Facilities) subject to Interconnection Reliability Operating Limits was updated.
- (4) Level Four: A level four noncompliance occurs if either of the following conditions are present:
 - (i) Could not identify the current values of the Interconnection Reliability Operating Limits for its Reliability Area.
 - (ii) No list of Facilities (or groups of Facilities) subject to Interconnection Reliability Operating Limits exists for the Reliability Authority Area.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where financial sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

202 — Monitoring

(a) Requirements

- (1) The Reliability Authority shall perform Real-time Monitoring of system operating parameters to determine if its Reliability Authority Area is operating within its Interconnection Reliability Operating Limits.

(b) Measures

- (1) The Reliability Authority shall have a list of Facilities (or groups of Facilities) subject to Interconnection Reliability Operating Limits available for its operations personnel's Real-time use.
- (2) The Reliability Authority shall have Interconnection Reliability Operating Limits available for its operations personnel's Real-time use.
- (3) The Reliability Authority shall have Real-time Data available in a form that system operators can compare to the Interconnection Reliability Operating Limits.
- (4) The Reliability Authority shall monitor system operating parameters and compare these against its Interconnection Reliability Operating Limits.

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The Reliability Authority shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period shall be 12 months from the last violation. The Reliability Authority shall keep data on limits for three calendar years. The Compliance Monitor shall keep audited data for three calendar years.
- (3) The Reliability Authority shall demonstrate the following upon the request of the Compliance Monitor:
 - (i) System operators actively monitoring and comparing Real-time system operating parameters associated with Interconnection Reliability Operating Limits.

(e) Levels of Noncompliance

- (1) Level One: Not applicable.
- (2) Level Two: List of Facilities (or groups of Facilities) subject to Interconnection Reliability Operating Limits not available to operations personnel for Real-time use.
- (3) Level Three: Not applicable.

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- (4) Level Four: A level four noncompliance occurs if any of the following conditions are present:
- (i) Interconnection Reliability Operating Limits not available to operations personnel for Real-time use; or
 - (ii) Real-time Data not available in a form that can be compared to the Interconnection Reliability Operating Limits; or
 - (iii) System operating parameters not monitored and compared against Interconnection Reliability Operating Limits.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where financial sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

203 — Analyses and Assessments

(a) Requirements

- (1) The Reliability Authority shall perform Operational Planning Analyses to assess whether the planned Bulk Electric System operations within its Reliability Authority Area will exceed any of its Interconnection Reliability Operating Limits.
- (2) The Reliability Authority shall perform Real-time Assessments to determine if its Reliability Authority Area is exceeding any Interconnection Reliability Operating Limits or is expected to exceed any Interconnection Reliability Operating Limits.

(b) Measures

- (1) The Reliability Authority shall identify operating situations or events that impact its Reliability Authority Area's ability to operate without exceeding any Interconnection Reliability Operating Limits.
 - (i) The Reliability Authority shall conduct an Operational Planning Analysis at least once each day, evaluating the next day's projected system operating conditions.
 - (ii) The Reliability Authority shall conduct a Real-time Assessment periodically, but at least once every 30 minutes.

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The Reliability Authority shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews once every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period shall be 12 months from the last violation. The Compliance Monitor shall keep audited data for three calendar years.
- (3) The Reliability Authority shall identify the following upon the request of the Compliance Monitor:
 - (i) The time the most recent Operational Planning Analysis was conducted.
 - (ii) Whether the planned Bulk Electric System operations within the Reliability Authority's Reliability Authority Area will exceed any of its Interconnection Reliability Operating Limits.
 - (iii) The time the most recent Real-time Assessment was conducted.
 - (iv) Whether the Real-time Assessment identified if its Reliability Authority Area is exceeding any Interconnection Reliability Operating Limits or is expected to exceed any Interconnection Reliability Operating Limits.

(e) Levels of Noncompliance

- (1) Level One: Not applicable.
- (2) Level Two: Not applicable.
- (3) Level Three: A level three noncompliance exists if any of the following conditions are present:
 - (i) No indication that an Operational Planning Analysis was conducted at least once each day.
 - (ii) No indication that a Real-time Assessment was conducted at least once each 30 minutes.
- (4) Level Four: A level four noncompliance exists if either of the following conditions are present:
 - (i) The Reliability Authority could not identify whether the planned Bulk Electric System operations within its Reliability Authority Area is expected to exceed any of its Interconnection Reliability Operating Limits, based on the results of the most recent Operational Planning Analysis.
 - (ii) The Reliability Authority could not identify whether the most recent Real-time Assessment identified if its Reliability Authority Area is exceeding any Interconnection Reliability Operating Limits or is expected to exceed any Interconnection Reliability Operating Limits.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where financial sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

204 — Actions

(a) Requirements

- (1) The Reliability Authority shall, without delay, act² or direct others to act to:
 - (i) Prevent instances where Interconnection Reliability Operating Limits may be exceeded.
 - (ii) Mitigate the magnitude and duration of instances where Interconnection Reliability Operating Limits have been exceeded.
- (2) The Reliability Authority shall include a statement in each Interconnection Reliability Operating Limit-related directive, that informs the recipient that the directive is related to an Interconnection Reliability Operating Limit.
- (3) The Reliability Authority shall document instances of exceeding Interconnection Reliability Operating Limits and shall document and complete an Interconnection Reliability Operating Limit Violation Report for instances of exceeding Interconnection Reliability Operating Limits for time greater than T_v .

(b) Measures

- (1) The Reliability Authority shall have documentation to support each instance where actions were taken or directives were issued to mitigate the magnitude and duration of exceeding an Interconnection Reliability Operating Limit.
 - (i) The documentation shall include the actions taken or directives issued, the magnitude of the event, and the duration of the event. (This data may be from an operating log, may be from the entity's energy management system, or may be from some other source.)
 - (i) The duration of the event shall be measured from the point when the limit is exceeded to the point when the system has returned to a state that is within the Interconnection Reliability Operating Limit for a minimum of one minute.
- (2) The Reliability Authority shall report each instance of exceeding an Interconnection Reliability Operating Limit for time greater than T_v .
 - (i) The Reliability Authority shall complete an Interconnection Reliability Operating Limit Violation Report and shall file the report with its Compliance Monitor within five business days of the initiation of the event. (The report shall include the date and time of the event, identification of which Interconnection Reliability Operating Limit was violated and the T_v for that limit, magnitude and duration of exceeding the Interconnection Reliability Operating Limit, actions taken or directives issued and

² Note that the Reliability Authority is expected to act without delay and may choose to take 'no overt action' and this may be an acceptable action as long as it is documented. Taking 'no overt action' is not the same as ignoring the problem.

the time these were initiated or issued, and an explanation of results of actions or directives.)

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The Reliability Authority shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period shall be 12 months from the last violation. The Reliability Authority shall keep Interconnection Reliability Operating Limit Violation Reports, operations logs, or other documentation for three calendar years. The Compliance Monitor shall keep audited data for three calendar years.
- (3) The Reliability Authority shall have the following available upon the request of its Compliance Monitor:
 - (i) Operations logs or other documentation indicating the magnitude and duration of each instance of exceeding an Interconnection Reliability Operating Limit and the actions or directives issued for each of these instances.
 - (ii) Interconnection Reliability Operating Limit Violation Reports.

(e) Levels of Noncompliance³

- (1) Level One: Interconnection Reliability Operating Limit exceeded for a time less than or equal to T_v and no documentation to indicate actions taken or directives issued to mitigate the instance.
- (2) Level Two: Not applicable.
- (3) Level Three: Not applicable.
- (4) Level Four: Interconnection Reliability Operating Limit exceeded for time greater than T_v .

³ Note that the Reliability Authority is expected to act without delay and may choose to take 'no overt action' and this may be an acceptable action as long as it is documented. Taking 'no overt action' is not the same as ignoring the problem.

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(f) Sanctions

(1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix.

- (i) Level one noncompliance sanctions shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.
- (ii) Level four noncompliance sanctions shall be the greater of the fixed dollar sanctions listed in the matrix, or the dollar amount that corresponds to the magnitude and duration of the event as highlighted in the following table:

If the Maximum Value % over the Limit (measured after the event duration exceeds T_v) is: <small>Max Value % = (Max Value/IROL limit - 1) * 100</small>	And the event duration exceeds its T_v by ___ minutes:	Then Multiply the Level 4 \$ sanction by:
0% < Max Value % ≤ 5%	$T_v < \text{Duration} \leq T_v + 5$ minutes	5
	$T_v + 5 \text{ minutes} < \text{Duration} \leq T_v + 10$ minutes	10
	$T_v + 10 \text{ minutes} < \text{Duration} \leq T_v + 15$ minutes	15
	$\text{Duration} > T_v + 15$ minutes	20
5% < Max Value % ≤ 10%	$T_v < \text{Duration} \leq T_v + 5$ minutes	10
	$T_v + 5 \text{ minutes} < \text{Duration} \leq T_v + 10$ minutes	15
	$T_v + 10 \text{ minutes} < \text{Duration} \leq T_v + 15$ minutes	20
	$\text{Duration} > T_v + 15$ minutes	25
10% < Max Value % ≤ 15%	$T_v < \text{Duration} \leq T_v + 5$ minutes	15
	$T_v + 5 \text{ minutes} < \text{Duration} \leq T_v + 10$ minutes	20
	$T_v + 10 \text{ minutes} < \text{Duration} \leq T_v + 15$ minutes	25
	$\text{Duration} > T_v + 15$ minutes	30
15% < Max Value % ≤ 20%	$T_v < \text{Duration} \leq T_v + 5$ minutes	20
	$T_v + 5 \text{ minutes} < \text{Duration} \leq T_v + 10$ minutes	25
	$T_v + 10 \text{ minutes} < \text{Duration} \leq T_v + 15$ minutes	30
	$\text{Duration} > T_v + 15$ minutes	35
20% < Max Value % ≤ 25%	$T_v < \text{Duration} \leq T_v + 5$ minutes	25
	$T_v + 5 \text{ minutes} < \text{Duration} \leq T_v + 10$ minutes	30
	$T_v + 10 \text{ minutes} < \text{Duration} \leq T_v + 15$ minutes	35
	$\text{Duration} > T_v + 15$ minutes	40
25% < Max Value % ≤ 30%	$T_v < \text{Duration} \leq T_v + 5$ minutes	30
	$T_v + 5 \text{ minutes} < \text{Duration} \leq T_v + 10$ minutes	35
	$T_v + 10 \text{ minutes} < \text{Duration} \leq T_v + 15$ minutes	40
	$\text{Duration} > T_v + 15$ minutes	45

205 — Data Specification and Collection

(a) Requirements

- (1) The Reliability Authority shall specify and collect the data it needs to support Real-time Monitoring, Operational Planning Analyses, and Real-time Assessments conducted relative to operating within its Reliability Authority Area's Interconnection Reliability Operating Limits. The Reliability Authority shall collect this data from the entities performing functions that have Facilities monitored by the Reliability Authority, and from entities that provide Real-time Facility status to the Reliability Authority. This includes specifying and collecting data from the following:
 - (i) Balancing Authorities
 - (ii) Generator Owners
 - (iii) Generator Operators
 - (iv) Load-serving Entities
 - (v) Reliability Authorities
 - (vi) Transmission Operators
 - (vii) Transmission Owners
- (2) The Reliability Authority shall specify when to supply data (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).
- (3) The Reliability Authority shall notify its Compliance Monitor when both of the following conditions are present:
 - (i) An entity that has data needed to support Real-time Monitoring, Operational Planning, or Real-time Assessments relative to operating within the Reliability Authority's Reliability Authority Area has not provided data as specified, and
 - (ii) The Reliability Authority was unable to resolve the issue with the entity responsible for providing the data.

(b) Measures

- (1) The Reliability Authority shall have a documented specification for data needed to build and maintain models needed to support Real-time Monitoring, Operational Planning Analyses, and Real-time Assessments relative to Interconnection Reliability Operating Limits.
 - (i) Specification shall include a list of required data, a mutually agreeable format, and timeframe and periodicity for providing data.
 - (ii) Specification shall address the data provision process to use when automated Real-time system operating data is unavailable.
- (2) The Reliability Authority shall have evidence that it has distributed its data specification to entities that have Facilities monitored by the Reliability

Authority and to entities that provide Facility status to the Reliability Authority.

- (3) The Reliability Authority shall notify its Compliance Monitor when an entity that has Facilities monitored by the Reliability Authority, or an entity that provides Facility status to the Reliability Authority, does not provide data as specified and the Reliability Authority was unable to resolve the issue with the entity responsible for providing the data.
 - (i) If the Reliability Authority does not receive data as specified, and is unable to resolve the situation, then the Reliability Authority shall notify its Compliance Monitor within five business days of discovering that the data is missing.

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The Reliability Authority shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period shall be 12 months from the last violation. The Reliability Authority shall keep its data specification(s) for three calendar years. The Compliance Monitor shall keep audited data for three calendar years.
- (3) The Reliability Authority shall have the following available upon the request of the Compliance Monitor:
 - (i) Data specification(s).
 - (ii) Proof of distribution of the data specification(s).

(e) Levels of Noncompliance

- (1) Level One: Data specification incomplete (missing either the list of required data, a mutually agreeable format, a timeframe for providing data, or a data provision process to use when automated real-time system operating data is unavailable).
- (2) Level Two: No data specification or the specification not distributed to the entities that have Facilities monitored by the Reliability Authority and the entities that provide the Reliability Authority with Facility status.
- (3) Level Three: Not applicable.
- (4) Level Four: Not applicable.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

206 — Data Provision

(a) Requirements

- (1) Each entity performing one of the following functions shall provide data and real-time Facility status, as specified, to the Reliability Authority(ies) with which it has a reliability relationship. The data is limited to data needed by the Reliability Authority to support Real-time Monitoring, Operational Planning Analyses, and Real-time Assessments conducted relative to operating within its Reliability Authority Area's Interconnection Reliability Operating Limits.
 - (i) Balancing Authorities
 - (ii) Generator Owners
 - (iii) Generator Operators
 - (iv) Load-serving Entities
 - (v) Reliability Authorities
 - (vi) Transmission Operators
 - (vii) Transmission Owners

(b) Measures

- (1) The responsible entity shall have evidence that it has provided data, as specified, to the requesting Reliability Authority, within the timeframe specified, in the mutually agreed upon format.

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The responsible entity shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period is 12 months from the last violation. The responsible entity shall keep data transmittal documentation for three calendar years. The Compliance Monitor shall keep audited data for three calendar years.
- (3) The responsible entity shall have the following available upon the request of the Compliance Monitor:
 - (i) Evidence indicating data was sent to the Reliability Authority or evidence that the entity responsible committed to providing the data identified in the specification.

(e) Levels of Noncompliance

- (1) Level One: Not applicable.
- (2) Level Two: Not applicable.
- (3) Level Three: Not applicable.
- (4) Level Four: Data was not provided to the Reliability Authority as specified and the situation was not resolved with the Reliability Authority.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

207 — Processes, Procedures, or Plans for Preventing and Mitigating Interconnection Reliability Operating Limits

(a) Requirements

- (1) The Reliability Authority shall have one or more processes, procedures, or plans that identify actions it shall take or actions it shall direct others to take, for both prevention and mitigation of instances of exceeding its Interconnection Reliability Operating Limits.

(b) Measures

- (1) The Reliability Authority shall have one or more documented processes, procedures, or plans that address both preventing and mitigating instances of exceeding Interconnection Reliability Operating Limits. The processes, procedures, or plans shall identify and be coordinated with those entities responsible for taking actions and with those entities impacted by such actions.

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The Reliability Authority shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.
- (2) The Performance-reset Period is 12 months from the last violation. The Reliability Authority shall keep its action plan for three calendar years. The Compliance Monitor shall keep audit records for three calendar years.
- (3) The Reliability Authority shall make the following available for inspection by the Compliance Monitor upon request:
 - (i) Processes, procedures, or plans that address preventing and mitigating instances of exceeding Interconnection Reliability Operating Limits.

(e) Levels of Noncompliance

- (1) Level One: Processes, procedures, or plans exist but weren't coordinated with all involved and impacted entities.
- (2) Level Two: Processes, procedures, or plans exist but weren't coordinated with any involved or any impacted entities.
- (3) Level Three: Processes, procedures, or plans exist but do not address both preventing and mitigating instances of exceeding Interconnection Reliability Limits.
- (4) Level Four: No processes, procedures, or plans exist addressing preventing and mitigating instances of exceeding Interconnection Reliability Operating Limits.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

208 — Reliability Authority Directives

(a) Requirements

- (1) The Transmission Operator, Balancing Authority, and Interchange Authority shall follow the Reliability Authority's directives to:
 - (i) Prevent instances where Interconnection Reliability Operating Limits may be exceeded.
 - (ii) Mitigate the magnitude and duration of instances where Interconnection Reliability Operating Limits have been exceeded.
- (2) The responsible entity shall document the Reliability Authority's directives and the actions taken.

(b) Measures

- (1) The responsible entity shall follow the Reliability Authority's directives and shall document the directives and actions taken to meet the directives.
- (2) The responsible entity shall document via an operations log or other data source, the following for each directive it receives relative to an Interconnection Reliability Operating Limit:
 - (i) Date and time of directive received.
 - (ii) Directive issued.
 - (iii) Actions taken in response to directive.

(c) Regional Differences

None identified.

(d) Compliance Monitoring Process

- (1) The responsible entity shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint to assess performance.
- (2) The Performance-reset Period is 12 months from the last violation. The responsible entity shall keep its documentation for three calendar years. The Compliance Monitor shall keep audit records for three calendar years.
- (3) The responsible entity shall make the following available for inspection by the Compliance Monitor upon request:
 - (i) Operations log or other data source(s) to show the following for each instance of being issued a Reliability Authority directive relative to an Interconnection Reliability Operating Limit:
 - 1) Date and time of each directive received.
 - 2) Directive issued.
 - 3) Actions taken in response to directive.

(e) Levels of Noncompliance

- (1) Level One: The responsible entity followed Reliability Authority's directives relative to preventing or mitigating instances of exceeding Interconnection Reliability Operating Limits but did not document the date and time of each directive received, the directive received, and the actions taken in response to the directive.
- (2) Level Two: Not applicable.
- (3) Level Three: Not applicable.
- (4) Level Four: The responsible entity did not follow the Reliability Authority's directives.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC Compliance and Enforcement Matrix. In places where sanctions are applied for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the dollars per megawatt sanctions.

These definitions will be posted and balloted along with the standard, but will not be restated in the standard. Instead, they will be included in a separate “Definitions” section containing definitions relevant to all standards that NERC develops.

DEFINITIONS

Cascading Outages: The uncontrolled successive loss of system elements triggered by an incident at any location.

Delayed Fault Clearing: Fault clearing consistent with correct operation of a breaker failure protection group and its associated breakers, or of a backup protection group with an intentional time delay.

Facility: A set of electrical equipment that operates as a single bulk electric system element (e.g., a line, a generating unit, a shunt compensator, transformer, etc.)

Facility Rating: The maximum or minimum voltage, current, frequency, real or reactive power flow through a facility that does not violate an applicable rating of any equipment comprising the facility.

Equipment Rating: The maximum and minimum voltage, current, frequency, real and reactive power flows on individual equipment apparatus under steady state, short-circuit and transient conditions, as permitted or assigned by the equipment owner.

Normal Clearing: A protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems.

Performance-reset Period: The time period in which performance is measured, evaluated, and then reset.

System Operating Limit: The maximum or minimum permissible value (e.g., MW, MVAR, MVA, current, frequency, voltage) on a facility or a limited group of facilities without violating applicable facility ratings and reliability criteria, as determined through system studies and/or operational experience. System operating limits may result from voltage, thermal or stability limits associated with one or more facilities. (Stability and voltage limits may be reflected as a permissible loading level.) System operating limits may refer to limits in both real-time operations and planning studies.

Transfer Capability: The measure of the ability of the interconnected electric system to reliably move or transfer electric power from one area to another over all transmission lines (or paths) between those areas under specified system conditions. The determination of transfer capability must adhere to applicable system operating limits.

In this standard, the terms *Reliability Authority*, *Planning Authority*, *Generator Owner*, *Transmission Operator*, *Transmission Planner* and *Transmission Service Provider* refer to the entities performing these functions as defined in NERC’s Functional Model.

600 — DETERMINE FACILITY RATINGS, SYSTEM OPERATING LIMITS, AND TRANSFER CAPABILITIES

- 601 Facility Ratings Methodology
- 602 Establish and Communicate Facility Ratings
- 603 System Operating Limits Methodology
- 604 Establish and Communicate System Operating Limits
- 605 Transfer Capabilities Methodology
- 606 Establish and Communicate Transfer Capabilities

Purpose: To determine Facility Ratings, System Operating Limits, and Transfer Capabilities necessary to plan and operate the bulk electric system within predefined Facility and operating limits.

Effective Period: This standard shall become effective upon the date of NERC Board of Trustees adoption.

Applicability: This standard applies to entities performing various electric system functions, as identified in the version 2 of NERC's Functional Model. NERC is now developing standards and procedures for the identification and certification of such entities. Until that identification and certification is complete, these standards apply to the existing entities (such as control areas, transmission owners and operators, and generation owners and operators) that are currently performing the defined functions.

601 Facility Ratings Methodology

(a) Requirement

- (1) Transmission Owners and Generator Owners shall document the methodology used for rating their Facilities and their jointly owned Facilities.
- (2) The methodology required in 601(a)(1) shall state that Facility Ratings shall not exceed the applicable ratings of the individual equipment that comprises the Facility.
- (3) The methodology required in 601(a)(1) shall identify the assumptions used to determine Facility Ratings, including the method by which ratings of major bulk electric system equipment types, including, but not limited to, generators, transmission lines, transformers, terminal equipment, series and shunt compensation devices that comprise the Facilities are determined and references to industry rating practices or other standards (e.g., IEEE, ANSI, CSA), when applied.

(b) Measures

- (1) The methodology required in 601(a)(1) shall be made available for inspection by the Compliance Monitor, Transmission Operator, Reliability Authority, Transmission Planner, and Planning Authority for the areas in which the Facilities are located within 15 business days of receipt of a request.
- (2) The methodology required in 601(a)(1) shall contain all items listed in 601(a)(2) and 601(a)(3).

(c) Regional Differences

- (1) None.

(d) Compliance Monitoring Process

- (1) Subsequent to the initial compliance review, compliance shall be:
 - (i) Self-certified at least once every three years.
 - (ii) Verified by information submittal to the Compliance Monitor, either on or off site, at least once every ten years.
 - (iii) Verified at any time as the result of a complaint by any impacted party.
- (2) The responsible entity shall demonstrate compliance to the Compliance Monitor within the first year that this standard becomes effective or the first year the entity commences operation by information submittal to the Compliance Monitor, either on or off site.
- (3) The Performance-reset Period shall be twelve months from the last noncompliance to 601(a). Responsible entities found noncompliant shall keep data until the deficiencies determined in the findings of noncompliance are resolved.

(e) Levels of Noncompliance

- (1) Level one: The Facility Ratings methodology does not contain 601(a)(2) or does not address one of the items listed in 601(a)(3).
- (2) Level two:
 - (i) The Facility Ratings methodology does not contain 601(a)(2) and does not address one of the items listed in 601(a)(3); or

- (ii) The Facility Ratings methodology does not address two of the applicable equipment types listed in 601(a)(3).
- (3) Level three:
- (i) The Facility Ratings methodology does not contain 601(a)(2) and does not address two or more of the items listed in 601(a)(3); or
 - (ii) The Facility Ratings methodology does not address three or more of the applicable equipment types listed in 601(a)(3).
- (4) Level four: The Facility Ratings methodology was not made available for inspection by the Compliance Monitor, Transmission Operator, Reliability Authority, Transmission Planner, and Planning Authority within 15 business days of receipt of a request by any of these entities.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC compliance and enforcement matrix (attached to the end of this standard for reference), but no financial penalties shall be enforced. Noncompliance sanctions shall consist of letters, issued in accordance with the matrix.

602 Establish and Communicate Facility Ratings

(a) Requirement

- (1) The Transmission Owner and Generator Owner shall establish Facility Ratings for their Facilities.
- (2) The Transmission Owner and Generator Owner shall provide Facility Ratings for their Facilities to their associated Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator.

(b) Measures

- (1) Responsible entities shall establish their Facility Ratings consistent with their ratings methodology, described in 601(a).
- (2) Responsible entities shall provide Facility Ratings associated with existing Facilities, new Facilities, modifications to existing Facilities, and re-ratings of existing Facilities to the Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator on a schedule established by the Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator.

(c) Regional Differences

- (1) None.

(d) Compliance Monitoring Process

- (1) The Compliance Monitor shall request annual verification from the Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator that each is being provided Facility Ratings in accordance with its respective schedule.
- (2) At least once every three years, the Compliance Monitor shall verify by information submittal, either on or off site, that randomly selected Facility Ratings were developed consistent with the Facility Ratings methodology.
- (3) Upon complaint from any impacted party, the Compliance Monitor shall assess the responsible entity's performance under this requirement by information submittal, either on or off site.
- (4) The Performance-reset Period shall be twelve months from the last noncompliance to 602(a). Responsible entities found noncompliant shall keep data until the deficiencies determined in the findings of noncompliance are resolved.

(e) Levels of Noncompliance

- (1) Level one: Some, but not all requested Facility Ratings associated with existing Facilities were provided to the Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator in accordance with their respective schedules.
- (2) Level two: Some, but not all Facility Ratings associated with new Facilities, modifications to existing Facilities, and re-ratings of existing Facilities were provided to the Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator in accordance with their respective schedules.
- (3) Level three: Facility Ratings provided were not developed consistent with the Facility Ratings methodology.

- (4) Level four: No Facility Ratings were provided to the Reliability Authority, Planning Authority, Transmission Planner, or Transmission Operator in accordance with their respective schedules.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC compliance and enforcement matrix (attached to the end of this standard for reference). In cases where financial penalties are assigned for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the per MW sanctions.

603 System Operating Limits Methodology

(a) Requirement

- (1) The Reliability Authority, Transmission Operator, Planning Authority, and Transmission Planner shall document the methodology used for determining System Operating Limits for the areas for which they are responsible.
- (2) The methodology required in 603(a)(1) shall state that System Operating Limits shall not violate the applicable Facility Ratings.
- (3) The methodology required in 603(a)(1) shall require that System Operating Limits be established such that operation within the System Operating Limits shall provide system performance consistent with that prescribed in 603(a)(3)(i)–603(a)(3)(iv) below:
 - (i) Pre-contingency
 - A) The system is in a steady state condition. All Facilities are within their pre-contingency thermal and voltage limits. The system is stable. Curtailment of load or transfers is not required to maintain the system within the System Operating Limits.
 - B) In the determination of System Operating Limits for planning purposes, the steady state condition used shall be consistent with the planned system condition, including planned maintenance.
 - C) In the determination of System Operating Limits for operations, the steady state condition used shall be appropriate for the time horizon for which the System Operating Limits are being determined.
 - (ii) Contingencies
 - A) The following single contingencies must be evaluated:
 - (a.) Single line to ground or 3-phase fault, with Normal Clearing, on any faulted Facility.
 - (b.) Loss of any Facility without a fault.
 - (c.) Single pole block, with Normal Clearing, in a monopolar or bipolar HVdc system.
 - (iii) Response to the first contingency on the planned system:
 - A) For the single contingencies specified in 603(a)(3)(ii), the system performance in the post-contingency time frame shall be:
 - (a.) All Facilities are operating within their applicable post-contingency thermal, frequency and voltage limits.
 - (b.) Cascading outages do not occur.
 - (c.) Uncontrolled separation of the system does not occur.
 - (d.) The system demonstrates transient, dynamic and voltage stability

- (e.) Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the faulted Facility or by the affected area, may occur in certain areas, provided this does not adversely impact the overall security of the interconnected transmission systems.
 - (f.) System adjustment or reconfiguration is permitted through manual or automatic control or protection actions.
 - (g.) To prepare for the next contingency, system adjustments are permitted, including changes to generation and the transmission system topology when determining limits.
- (iv) Response to Subsequent Contingencies (operations studies only):
- A) For the single contingencies specified in 603(a)(3)(ii), the system performance in the post-contingency time frame shall be:
 - (a.) All Facilities are operating within their applicable post-contingency thermal, frequency and voltage limits.
 - (b.) Cascading outages do not occur.
 - (c.) Uncontrolled separation of the system does not occur.
 - (d.) The system demonstrates transient, dynamic and voltage stability.
 - (e.) Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the faulted Facility or by the affected area, may occur in certain areas provided this does not adversely impact the overall security of the interconnected transmission systems.
 - (f.) Interruption of load or system reconfiguration is permitted through manual or automatic control or protection actions.
 - (g.) To prepare for the next contingency, system adjustments are permitted, including changes to generation, load and the transmission system topology when determining limits.
- (4) The methodology required in 603(a)(1) shall include a description of how the following are addressed in the determination of System Operating Limits, at a minimum:
- (i) Applicable contingencies.
 - (ii) The accuracy and level of detail of system models.
 - (iii) Special protection systems or remedial action plans.
 - (iv) Transmission system configuration, generation dispatch and load level.
 - (v) Any reliability margins used in the determination of System Operating Limits to address uncertainty in the conditions listed in 603.1.4.1.–1.4.4.

(b) Measures

- (1) The methodology required in 603(a)(1) shall be made available for inspection by the Compliance Monitor, Reliability Authority, Transmission Operator, Transmission Planner, and Planning Authority for the areas in which the Facilities are located within 15 business days of receipt of a request.
- (2) The methodology required in 603(a)(1) shall address all items listed in 603(a)(2)–603(a)(4).

(c) Regional Differences

- (1) The following Regional Difference shall apply only in the Northeast Power Coordinating Council (NPCC). The NPCC methodology required in 603(a)(1) shall require that System Operating Limits be established for following two system conditions, in addition to those listed in 603(a)(3)(i)–603(a)(3)(iv):

(i) Normal Transfer Capability

System Operating Limits shall be established such that operation within the System Operating Limit shall provide system performance consistent with that prescribed in 603(a)(3)(i)–603(a)(3)(iv) above. In addition to the single Facility contingencies listed in 603(a)(3)(ii)(A)(a)–603(a)(3)(ii)(A)(c), the following multiple Facility contingencies must also be evaluated when establishing System Operating Limits:

- A) Simultaneous permanent phase to ground faults on different phases of each of two adjacent transmission circuits on a multiple circuit tower, with Normal Clearing. If multiple circuit towers are used only for station entrance and exit purposes, and if they do not exceed five towers at each station, then this condition is an acceptable risk and therefore can be excluded.
- B) A permanent phase to ground fault on any transmission circuit, transformer, or bus section with Delayed Fault Clearing.
- C) Simultaneous permanent loss of both poles of a direct current bipolar facility without an AC fault.
- D) The failure of a circuit breaker associated with a special protection system to operate when required following: loss of any element without a fault; or a permanent phase to ground fault, with Normal Clearing, on any transmission circuit, transformer or bus section.

(ii) Emergency Transfer Capability.

System Operating Limits shall be established such that operation within the System Operating Limit shall provide system performance consistent with that prescribed in 603(a)(3)(i)–603(a)(3)(iv) above.

(d) Compliance Monitoring Process

- (1) Subsequent to the initial compliance review, compliance shall be:
 - (i) Self-certified at least once every three years.

- (ii) Verified by information submittal to the compliance monitor, either on or off site, at least once every ten years.
 - (iii) Verified at any time as the result of a complaint.
- (2) The responsible entity shall demonstrate compliance to the Compliance Monitor, within the first year that this standard becomes effective or the first year the entity commences operation, by information submittal to the Compliance Monitor, either on or off site.
 - (3) The Performance-reset Period shall be twelve months from the last noncompliance to 603(a). Responsible entities found noncompliant shall keep data until the deficiencies determined in the findings of noncompliance are resolved.

(e) Levels of Noncompliance

- (1) Level one: The System Operating Limits methodology did not contain the requirement that System Operating Limits not violate applicable Facility Ratings.
- (2) Level two: The System Operating Limits methodology did not contain the requirement that System Operating Limits be established such that operation within the limits shall meet the performance requirements listed in 603(a)(3).
- (3) Level three: The System Operating Limits methodology did not contain the item listed in either 603(a)(2) or 603(a)(3), and any two items listed in 603(a)(4).
- (4) Level four: The System Operating limits methodology was not made available for inspection by the Compliance Monitor, Reliability Authority, Transmission Operator, Transmission Planner, or Planning Authority within 15 business days of receipt of a request.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC compliance and enforcement matrix (attached to the end of this standard for reference), but no financial penalties shall be enforced. Noncompliance sanctions shall consist of letters, issued in accordance with the matrix.

604 Establish and Communicate System Operating Limits

(a) Requirement

- (1) The Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator shall establish System Operating Limits for the areas for which they are responsible.
- (2) The Reliability Authority, Planning Authority, Transmission Planner, and Transmission Operator shall provide System Operating Limits for the area for which they are responsible to associated Transmission Operators, Planning Authorities, Transmission Service Providers, Transmission Planners, and Reliability Authorities.

(b) Measures

- (1) Responsible entities shall establish their System Operating Limits consistent with their System Operating Limit methodology, described in 603(a).
- (2) Reliability Authorities and Transmission Operators shall provide System Operating Limits to Transmission Service Providers and Transmission Operators within their reliability area for the time horizon for which they are responsible (e.g., the current day, next day, etc.) on a schedule established by the Transmission Operators and Transmission Service Providers.
- (3) Planning Authorities and Transmission Planners shall provide System Operating Limits to Transmission Service Providers, Transmission Operators, Transmission Planners, and Reliability Authorities within their reliability area for the time horizon for which they are responsible on a schedule established by the Transmission Operator, Transmission Service Provider, Transmission Planner, and Reliability Authority.

(c) Regional Differences

- (1) None.

(d) Compliance Monitoring Process

- (1) The Compliance Monitor shall request annual verification from the entities performing the Reliability Authority, Transmission Service Provider, and Transmission Operator that each is being provided System Operating Limits in accordance with its respective schedule.
- (2) At least once every three years, the Compliance Monitor shall verify by information submittal, either on or off site, that randomly selected System Operating Limits are developed consistent with the System Operating Limits methodology.
- (3) Upon complaint from any impacted party, the Compliance Monitor shall assess the responsible entity's performance under this requirement by information submittal, either on or off site.
- (4) The Performance-reset Period shall be twelve months from the last noncompliance to 604(a). Responsible entities found noncompliant shall keep data until the deficiencies determined in the findings of noncompliance are resolved.

(d) Levels of Noncompliance

- (1) Level one: (Not specified)

- (2) Level two: Some, but not all System Operating Limits within their reliability area for the time horizon for which they are responsible were provided upon request to them in accordance with their respective schedules.
- (3) Level three: System Operating Limits provided were not developed consistent with System Operating Limits methodology.
- (4) Level four: No System Operating Limits were provided to the Reliability Authority, Planning Authority, Transmission Planner, Transmission Operator, or Transmission Service Provider in accordance with their respective schedules.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC compliance and enforcement matrix (attached to the end of this standard for reference). In cases where financial penalties are assigned for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the per MW sanctions.

605 Transfer Capability Methodology

(a) Requirement

- (1) The Reliability Authority and Planning Authority shall document the methodology they use to determine Transfer Capabilities.
- (2) The methodology required in 605(a)(1) shall state that Transfer Capabilities shall adhere to all applicable System Operating Limits.
- (3) The methodology required in 605(a)(1) shall include a description of how the following are addressed:
 - (i) Transmission system topology.
 - (ii) System demand.
 - (iii) Generation dispatch.
 - (iv) Current and projected transmission uses.
 - (v) Any reliability margins applied to reflect uncertainty associated with projected system conditions listed in 605(a)(3)(i).

(b) Measures

- (1) Responsible entities shall make the methodology required in 605(a)(1) available for inspection by the Compliance Monitor, associated Reliability Authorities, and Planning Authorities within 15 business days of receipt of a request.
- (2) The methodology required in 605(a)(1) shall address all items listed in 605(a)(2) and 605(a)(3).

(c) Regional Differences

- (1) None.

(d) Compliance Monitoring Process

- (1) Subsequent to the initial compliance review, compliance shall be:
 - (i) Self-certified at least once every three years.
 - (ii) Verified by information submittal to the Compliance Monitor, either on or off site, at least once every ten years.
 - (iii) Verified at any time as the result of a complaint.
- (2) The responsible entity shall demonstrate compliance to the Compliance Monitor within the first year that this standard becomes effective or the first year the entity commences operation, by information submittal to the Compliance Monitor, either on or off site.
- (3) The Performance-reset Period shall be twelve months from the last noncompliance to 605(a). Responsible entities found noncompliant shall keep data until the deficiencies determined in the findings of noncompliance are resolved.

(e) Levels of Noncompliance

- (1) Level one: The Transfer Capability methodology does not contain the item listed in 605(a)(2) or address one of the items listed in 605(a)(3).
- (2) Level two:

- (i) The Transfer Capability methodology does not contain the item listed in 605(a)(2) and does not address one of the items listed in 605(a)(3); or
 - (ii) The Transfer Capability methodology does not address two of the items listed in 605(a)(3).
- (3) Level three:
- (i) The Transfer Capability methodology does not contain the item listed in 605(a)(2) and does not address two or more of the items listed in 605(a)(3); or
 - (ii) The Transfer Capability methodology does not address three or more of the equipment types listed in 605(a)(3).
- (4) Level four: The Transfer Capability methodology was not made available for inspection by the Compliance Monitor, Reliability Authority or Planning Authority within 15 business days of receipt of a request.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC compliance and enforcement matrix (attached to the end of this standard for reference), but no financial penalties shall be enforced. Noncompliance sanctions shall consist of letters, issued in accordance with the matrix.

606 Establish and Communicate Transfer Capabilities

(a) Requirement

- (1) The Reliability Authority and Planning Authority shall establish and provide interregional and intraregional Transfer Capabilities requested by associated Reliability Authorities, Planning Authorities, Transmission Operators, Transmission Service Providers, Transmission Planners, and NERC and its Regions.

(b) Measures

- (1) Responsible entities shall develop their Transfer Capabilities consistent with their Transfer Capability methodology, required in 605(a)(1).
- (2) Responsible entities shall supply Transfer Capability values as requested to Reliability Authorities, Planning Authorities, Transmission Operators, Transmission Service Providers, Transmission Planners, and NERC and its Regions on a schedule established by the Reliability Authorities, Planning Authorities, Transmission Operators, Transmission Service Providers, Transmission Planners, and NERC and its Regions.

(c) Regional Differences

- (1) None.

(d) Compliance Monitoring Process

- (1) The Compliance Monitor shall request annual verification from the Reliability Authority, Planning Authority, Transmission Service Provider, Transmission Planner, Transmission Operator, and NERC and its Regions that each is being provided Transfer Capabilities in accordance with its respective schedules.
- (2) At least once every three years, the Compliance Monitor shall verify by information submittal, either on or off site, that randomly selected Transfer Capabilities are developed consistent with the Transfer Capability methodology.
- (3) Upon complaint from any impacted party, the Compliance Monitor shall assess the responsible entity's performance under this requirement by information submittal, either on or off site.
- (4) The Performance-reset Period shall be twelve months from the last noncompliance to 606(a). Responsible entities found noncompliant shall keep data until the deficiencies determined in the findings of noncompliance are resolved.

(e) Levels of Noncompliance

- (1) Level one: (Not specified).
- (2) Level two: Some, but not all requested Transfer Capabilities within their reliability area for the time horizon for which they are responsible were provided upon request to Reliability Authority, Planning Authority, Transmission Service Provider, Transmission Planner, Transmission Operator, and NERC and its Regions in accordance with their respective schedules.
- (3) Level three: Transfer Capabilities provided are not developed consistent with the Transfer Capability methodology.
- (4) Level four: No requested Transfer Capabilities within their reliability area for the time horizon for which they are responsible were provided to Reliability Authority,

Planning Authority, Transmission Service Provider, Transmission Planner, Transmission Operator, and NERC and its Regions in accordance with their respective schedules.

(f) Sanctions

- (1) Sanctions for noncompliance shall be applied consistent with the NERC compliance and enforcement matrix (attached to the end of this standard for reference). In cases where financial penalties are assigned for noncompliance, these penalties shall be the fixed dollar sanctions listed in the matrix, not the per MW sanctions.

Sanctions Matrix

The following matrix of compliance sanctions was developed by the NERC Compliance Subcommittee as part of the NERC Compliance Enforcement Program and has been approved by the NERC Board of Trustees.

Levels of noncompliance are described in this matrix. The matrix is divided into four levels of increasing noncompliance vertically and the number of violations in a defined period at a given level horizontally.

Note that there are three sanctions that can be used: a letter, a fixed fine, and a \$/MW fine.

Letter

This sanction is used to notify company executives, regional officers, and regulators that an entity is noncompliant. The distribution of the letter varies depending on the severity of the noncompliance. The intent of a letter sanction is to bring noncompliance to the attention of those who can influence the actions of an organization to become compliant.

- Letter (A) — Letter to the entity's vice president level or equivalent informing the entity of noncompliance, with copies to the data reporting contact, and the entity's highest ranking Regional Council representative.
- Letter (B) — Letter to the entity's chief executive officer or equivalent, with copies to the data reporting contact, the entity's highest ranking Regional Council representative, and the vice president over the area in which noncompliance occurred.
- Letter (C) — Letter to the entity's chief executive officer and chairman of the board, with copies to the NERC president, regulatory authorities having jurisdiction over the noncompliant entity (if requested by such regulatory authorities), the data reporting contact, the entity's highest ranking Regional Council representative, and the vice president over the area in which noncompliance occurred.

Fixed Dollars

This sanction is to be used when a letter sanction is not sufficient and a stronger message is desired to encourage compliance. Fixed dollars are typically assigned as a one-time fine that is ideal for measures involving planning-related standards. Many planning actions use forward-looking assumptions; if such assumptions prove wrong in the future, yet are made in good faith using good practices, entities should not be harshly penalized for the outcome.

Dollar per MW

Dollar/MW sanctions are intended to be used primarily for operationally based standards. The 'MW' can be load, generation, or flow on a line. The reasonableness of the sanction must be considered when assessing \$/MW penalties. NERC's goal is for the industry to achieve compliance, as opposed to collecting large financial penalties.

Occurrence Period Category	Number of Violations in Occurrence Period at a Given Level			
	1 st Period of Violations (Fully Compliant Last Period)	1	2	3
2 nd Consecutive Period of Violations		1	2	3 or more
		\$ Sanction from Table; Letter (C) only if Letter (B) previously sent		
3 rd Consecutive Period of Violations		1	2 or more	
		\$ Sanction from Table; Letter (C) only if Letter (B) previously sent		
4 th or greater Consecutive Period of Violations		1		
		\$ Sanction from Table; Letter (C)		

Level of Non-Compliance	Sanctions Associated with Noncompliance			
	Level 1	Letter (A)	Letter (A)	Letter (B) and \$1,000 or \$1 Per MW
Level 2	Letter (A)	Letter (B) and \$1,000 or \$1 Per MW	Letter (B) and \$2,000 or \$2 Per MW	Letter (B) and \$4,000 or \$4 Per MW
Level 3	Letter (B) and \$1,000 or \$1 Per MW	Letter (B) and \$2,000 or \$2 Per MW	Letter (B) and \$4,000 or \$4 Per MW	Letter (B) and \$6,000 or \$6 Per MW
Level 4	Letter (B) and \$2,000 or \$2 Per MW	Letter (B) and \$4,000 or \$4 Per MW	Letter (B) and \$6,000 or \$6 Per MW	Letter (B) and \$10,000 or \$10 Per MW

Interpreting the Tables:

- These tables address penalties for violations of the same measure occurring in consecutive compliance reporting periods.
- If a participant has noncompliant performance in consecutive compliance reporting periods, the sanctions applied are more punitive.

July 9, 2004

NERC Interconnected Reliability Operating Limit - Informational Reporting

Draft For Discussion and Comment by Operating Committee

1) Background

At the Operating Committee's March 2003 meeting, the OLDTF presented its report containing new and refined definitions reinforced by requirements and associated operating principles. These definitions included System Operating Limit (SOL) and Interconnected Reliability Operating Limit (IROL), the latter of which was designed to replace the definition of Operating Security Limit. The task force also recommended a new form for reporting IROL violations that exceeded 30 minutes. The Operating Committee directed the Reliability Coordinators to "field test" the definitions of SOL and IROL for the period May 1 through November 1, 2003, and recently extended the field test period until November 30, 2004.

While the focus of the OLD-TF to date has been on developing a definition for consistent reporting of those IROL violations that are greater than 30 minutes in duration, the Task Force believes that there is a great deal of useful information in capturing "IROL -Informational Reporting". That is, those IROL violations that are mitigated in less than 30 minutes that would normally be unreported.

These "Informational Reports" should be investigated to identify risks, lessons learned and initiate operational discussions at the Reliability Coordinators WG from each event. The analysis of these reports could also assist NERC and the Regional Councils in determining the consistency of calculation and implementation of IROLs across the various Reliability Coordinators and Control Areas on an ongoing basis. These Informational Reports will also assist in the identification of those portions of the bulk electrical system that are being stressed on a frequent basis.

2) Principles and Rationale applied in the development and implementation of IROL Informational Reporting

- a) The reporting process should not be overly burdensome to the Reliability Coordinators. Reporting is required when any actual flow(s) or post-contingency flow(s) exceed a specified IROL. That is, the condition could result in instability, uncontrolled separation, or cascading outages that could affect a widespread area, imposing risk on the Interconnection or any additional conditions as required and documented by the Region.
- b) Violations that are a part of normal operation should not normally require reporting. IROL Informational Reporting would be required for violations mitigated in the period of 15 to 30 minutes. This time line will prevent reporting due to short duration transient power swings, normal planned switching events which takes a system out of scope of coverage (i.e., causes system operation outside of limits) for short defined durations, or for contingency operation that is within Policy (i.e., IROL violations following a contingency while in the Disturbance Recovery Period).
- c) Reporting requirements should consist mainly of conditions where the bulk electrical system was exposed to the potential of instability, voltage collapse, or uncontrolled cascading for the next contingency. However, "other" events where an IROL was approached, but not exceeded should be considered to increase the awareness of the events that may be observed. Therefore, reporting would also be required for any condition that has taken an RC into Unstudied Conditions for the 15-30 minute time period to understand the action being taken to ensure IROL's are observed.
- d) **IROL Informational reporting will not be considered a LIMIT COMPLIANCE VIOLATION.**

3) Reporting Criteria

Each RELIABILITY COORDINATOR shall report to NERC and Regional Councils:

- a) All INTERCONNECTED RELIABILITY OPERATING LIMIT VIOLATIONS that are sustained for more than 15 consecutive minutes, but less than 30 consecutive minutes, (including those instances where a system is operating out of scope of coverage for these specified periods of time as per OLD-TF report requirement 2.1.4.1),
- b) When the actual flows on the monitored element(s) that compose an IROL are greater than or equal to 95% of IROL for more than 15 consecutive minutes following a contingency event, or
- c) Failure of relay protections that render the system out of scope of coverage for more than 15 consecutive minutes.

4) Reporting Method

- a) Reports will be filed with NERC and Regional Councils via the NERC Interconnected Reliability Operating Limit Informational Reporting template (attached).
- b) Reporting will be on a monthly basis.
- c) Report submissions to NERC are required before the 15 of each month following the reporting month.
- d) Initially the Operating Limits Definition Task Force will review submitted reports and report to Reliability Coordinator Working Group on a quarterly basis. Report results will also be available to the other NERC forums such as the Planning Committee, Transmission Sub-Committee and Reliability Assessment Sub-Committee for review. Following a suitable period of time, the Reliability Coordinator Working Group should become custodian of the IROL Informational Reporting and Assessment process.

Reports will be transmitted to Larry Kezele at:
larry.kezele@nerc.net

5) Definitions (from the OLD-TF Report)

Contingency. The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch, or other electrical element. A contingency also may include multiple components, which are related by situations leading to simultaneous component outages.

Interconnected Reliability Operating Limit (IROL). The value (such as MW, MVar, Amperes, Frequency, or Volts) derived from, or a subset of, the SYSTEM OPERATING LIMITS, **which if exceeded, could expose a WIDESPREAD AREA of the BULK ELECTRICAL SYSTEM to instability, uncontrolled separation(s) or cascading outages.**

Limit Violation. The operating state during which one or more FACILITIES are outside SYSTEM OPERATING LIMIT or INTERCONNECTED RELIABILITY OPERATING LIMIT. A violation occurs at the instant the established limit is exceeded (see diagram above). This could be a result of a change in one or more operating parameters (i.e. bulk electrical system configuration changes or any change in the distribution of flows).

Limit Compliance Violation. An INTERCONNECTED RELIABILITY OPERATING LIMIT VIOLATION that has occurred for more than 30 consecutive minutes.

Submit report to
Regional Council
and NERC staff.

Appendix 2 - NERC Interconnected Reliability Operating Limit Informational Reporting¹

This is an MS Word[®] Form. Use the tab key to select each data field.

Reporting Entities	
Reliability Coordinator(s)	
Affected Entities	
Control Area(s), Transmission Operator(s), etc.	
Submittal Date	
Contact Name	
Telephone #	
E-mail Address	
Date and time IROL Violation began:	Date and time IROL Violation was mitigated.
Date (mm/dd/yy)	Date (mm/dd/yy)
Time/Zone	Time/Zone
Describe the IROL Violation by providing details of the system operating state, including all pertinent operating parameters (generator output, power transfer amount, line status, line loading, bus voltage, etc.)	
Describe the contingent facility(s) that would have caused the Cascading Outages.	
Provide all pertinent operating parameters' maximum values or most critical states during the condition. (This should include transmission lines tripped and their respective nominal operating voltages.)	
Describe the IROL Violation including: cause, key scheduled and actual flows during the Near Miss condition, and potential or actual equipment damage, potential critical services interrupted, potential system separation, etc.	
Did mitigating action plan include load shed? How many MW? Where?	
Yes	No

¹ This form is not intended for use in Limit Compliance Violation reporting. Limit Compliance Violation reporting is done on a separate form for violations lasting greater than 30 minutes. This form is intended to gather information and lessons learned for violations lasting less than 30 minutes.

If the IROL Violation was caused due to a misoperation of a special protection or remedial action scheme, what action has been taken to prevent recurrence?

If the mitigation plan included a special protection or remedial action relay scheme, please provide a description?

Forward report to Regional Council and NERC (larry.kezele@nerc.net)
